1 Choose the correct answer from the given ones :

1 In ΔXYZ , if $XY > ZX$, then m ($\angle Y$) ..... m ($\angle Z$)

(a) > (b) < (c) = (d) ≡

2 The measure of the exterior angle of an equilateral triangle equals .....

(a) 30° (b) 60° (c) 120° (d) 90°

3 The lengths 9 cm. , 4 cm. and ..... may be the side lengths of an isosceles triangle.

(a) 9 cm. (b) 13 cm. (c) 5 cm. (d) 4 cm.

4 $\overline{AD}$ is a median of ΔABC , and M is the point of concurrence of the medians , then AM = ... AD

(a) $\frac{2}{3}$ (b) $\frac{1}{2}$ (c) $\frac{3}{2}$ (d) 2

5 ΔXYZ is an isosceles triangle in which m ($\angle X$) = 100° , then m ($\angle Y$) = ...

(a) 100° (b) 80° (c) 60° (d) 40°

6 The lengths which can be lengths of sides of a triangle are .....

(a) (0 , 3 , 5) (b) (3 , 3 , 5) (c) (3 , 3 , 6) (d) (3 , 3 , 7)

7 In ΔABC , if m ($\angle B$) = 130° , then the longest side of it is .....

(a) $\overline{BC}$ (b) $\overline{AC}$ (c) $\overline{AB}$ (d) its median.

8 In ΔABC which is right-angled at B , if AC = 20 cm. , then the length of the median drawn from B equals .....

(a) 10 cm. (b) 8 cm. (c) 6 cm. (d) 5 cm.

9 The point of concurrence of the medians of the triangle divides each median in the ratio of ..... from the base.

(a) 1 : 2 (b) 1 : 3 (c) 2 : 1 (d) 3 : 1

10 If Δ ABC is right-angled at B , AB = 6 cm. , BC = 8 cm. , then the length of the median drawn from B equals ..... cm.

(a) 10 (b) 8 (c) 6 (d) 5

11 The measure of one of the base angles in the isosceles triangle is 65° , then the measure of its vertex angle equals .....°

(a) 65 (b) 50 (c) 130 (d) 55

12 In Δ ABC , if AB = 3 cm. , BC = 5 cm. , then AC $\in$ .....

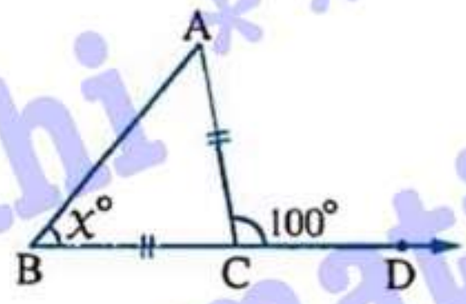
(a)]2 , 8[(b)]2 , 7[(c)]2 , 15[(d)]8 , 15[

13 **In the opposite figure :**

CA = CB , m ($\angle$ B) = $\mathcal{X}$°

, m ($\angle$ ACD) = 100° where C $\in \overline{BD}$

, then $\mathcal{X}$ = ...



(a) 50° (b) 100° (c) 150° (d) 200°

14 XYZ is a triangle in which m ($\angle$ Z) = 70° and m ($\angle$ Y) = 60°

, then YZ ..... XY

(a) > (b) < (c) = (d) twice

15 The triangle which has three axes of symmetry is .....

(a) scalene. (b) isosceles. (c) right-angled. (d) equilateral.

16 The base angles of the isosceles triangle are .....

(a) alternate (b) corresponding (c) congruent (d) supplementary

17 In Δ ABC , if m ($\angle$ A) = 100° and AB = AC , then m ($\angle$ ABC) = ...

(a) 80° (b) 60° (c) 40° (d) 30°

18 The numbers 4 , $\mathcal{X}$ + 4 , 8 can be lengths of sides of an isosceles triangle if $\mathcal{X}$ = ...

(a) 4 (b) 0 (c) 3 (d) 8

19 The sum of lengths of any two sides of a triangle ..... the length of the third side.

(a) < (b) > (c) = (d) ≡

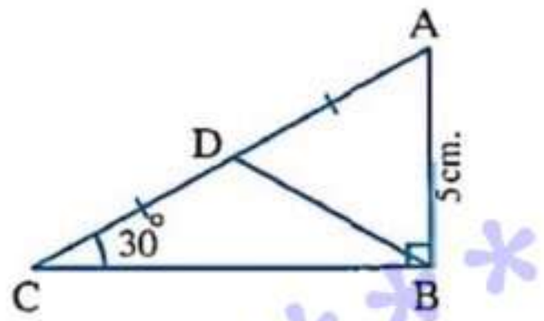
20 The number of symmetry axes of the isosceles triangle is .....

(a) 1 (b) 2 (c) 3 (d) 4

21 **In the opposite figure :**

AD = DC , m (∠ C) = 30° , m (∠ ABC) = 90°

, AB = 5 cm. , then the perimeter of Δ ABD = ... cm.



(a) 5 (b) 15

(c) 20 (d) 25

22 The number of axes of symmetry of the equilateral triangle equals .....

(a) zero (b) 1 (c) 2 (d) 3

23 In Δ ABC , AB = 4 cm. , BC = 6 cm. , then AC ∈ .....

(a)]2 , 4[(b) [2 , 10] (c)]2 , 10[(d) [0 , 10]

24 If M is the point of concurrence of the medians of Δ ABC , $\overline{AD}$ is a median , then MA = ...

(a) 2 AD (b) $\frac{2}{3}$ AD (c) $\frac{3}{2}$ AD (d) $\frac{1}{2}$ MD

25 In Δ ABC , m (∠ A) = 60° , m (∠ C) = 45° , then .....

(a) AB < AC (b) AB = AC (c) AB > AC (d) AB = BC

26 The length of the side opposite to the angle of measure 30° in the right-angled triangle equals ..... the length of the hypotenuse.

(a) $\frac{1}{2}$ (b) $\frac{2}{3}$ (c) $\frac{1}{4}$ (d) 2

27 ABC is an equilateral triangle , then m (∠ A) = ...°

(a) 45 (b) 60 (c) 120 (d) 35

28 The numbers which can not be side lengths of a triangle are .....

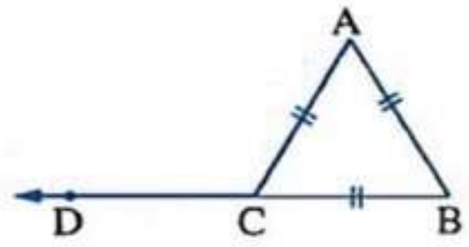
(a) 3 , 3 , 3 (b) 3 , 3 , 4 (c) 3 , 3 , 5 (d) 3 , 3 , 6

29 **In the opposite figure :**

Δ ABC is equilateral , then m (∠ ACD) = ...

(a) 45° (b) 60°

(c) 120° (d) 135°



30 In Δ ABC which is right-angled at B , if AC = 20 cm. , then the length of the median of the triangle drawn from B equals .....

(a) 10 cm. (b) 8 cm. (c) 6 cm. (d) 5 cm.

31 The sum of lengths of two sides in a triangle is ..... the length of the third side.

(a) greater than (b) smaller than (c) equals to (d) twice

32 If the lengths of two sides in an isosceles triangle are 8 cm. and 4 cm. , then the length of the third side is ..... cm.

(a) 4 (b) 8 (c) 3 (d) 12

33 If the measure of the vertex angle of an isosceles triangle is 80° , then the measure of one of the base angles equals .....

(a) 60° (b) 40° (c) 30° (d) 50°

34 The point of intersection of the medians of the triangle divides each of them in the ratio of ..... from the vertex.

(a) 1 : 2 (b) 1 : 3 (c) 2 : 1 (d) 2 : 3

35 In Δ ABC , if AC = 4 cm. , BC = 3 cm. , then m (∠ B) ..... m (∠ A)

(a) > (b) < (c) = (d) ≤

36 **2 Complete :**

In the right-angled triangle , the length of the median drawn from the vertex of the right angle equals .....

37 The median of the isosceles triangle from the vertex angle ..... , ...

38 The longest side in the right-angled triangle is .....

39 In ΔABC , if $m(\angle A) = 30°$ and $m(\angle B) = 90°$, then BC = ... AC

40 If the measure of an angle in a right-angled triangle is 45° , then the triangle is .....

41 The bisector of the vertex angle of the isosceles triangle ..... , ...

42 ΔABC is right-angled at B , $m(\angle A) = 30°$, AC = 10 cm. , then CB = ... cm.

43 If $\overline{AD}$ is a median in ΔABC , and M is the point of intersection of its medians and AM = 12 cm. , then AD = ...

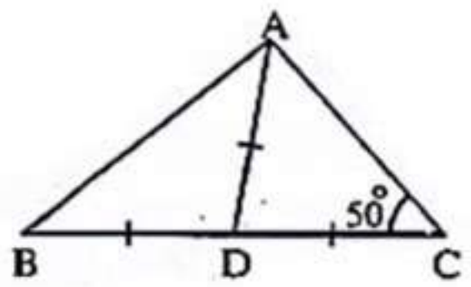
44 The medians of the triangle are .....

45 **In the opposite figure :**

AD = DC = BD

, $m(\angle C) = 50°$

, then $m(\angle B)$ = ...°



46 The perpendicular bisector of a line segment is called .....

47 Any point on the axis of symmetry of a line segment is ..... from its terminals.

48 The straight line passing through the vertex angle of the isosceles triangle perpendicular to its base .....

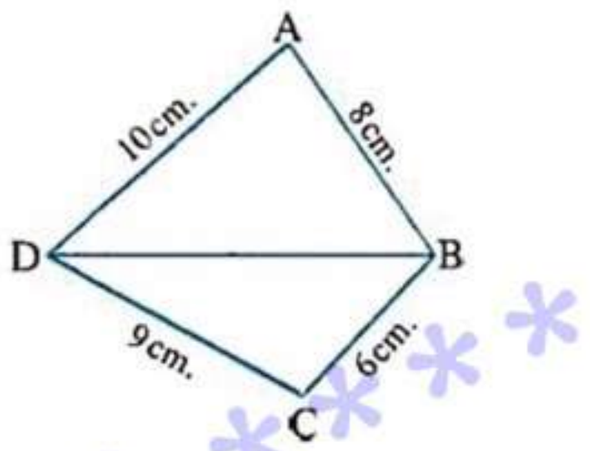
49 **In the opposite figure :**

ABCD is a quadrilateral in which AB = 8 cm.

, BC = 6 cm. , CD = 9 cm.

and DA = 10 cm.

Prove that : m (∠ ABC) > m (∠ ADC)



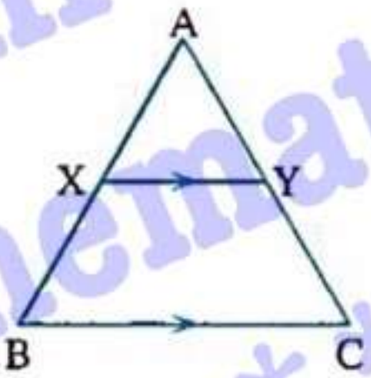
50 **In the opposite figure :**

ABC is a triangle in which AB = AC

, $\overline{XY}$ // $\overline{BC}$

Prove that :

Δ AXY is an isosceles triangle.



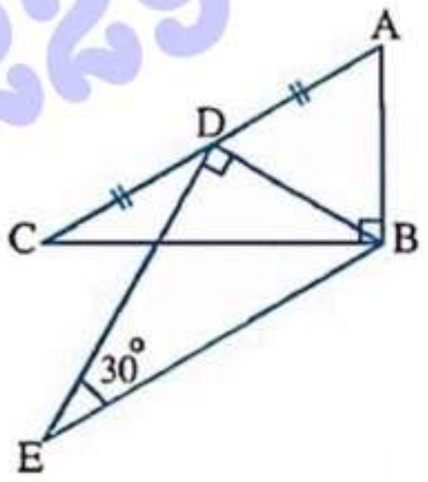
51 **In the opposite figure :**

m (∠ ABC) = m (∠ BDE) = 90°

, m (∠ E) = 30°

, D is the midpoint of $\overline{AC}$

Prove that : AC = BE



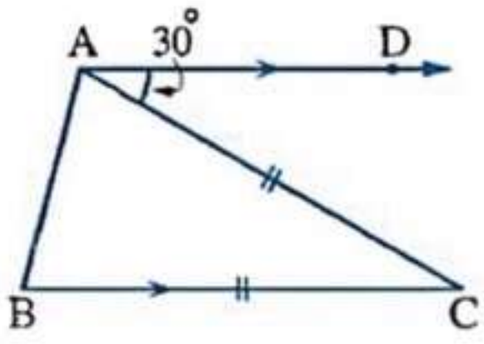
52 **In the opposite figure :**

ABC is a triangle in which AC = BC

, $\overrightarrow{AD}$ // $\overline{BC}$, m (∠ DAC) = 30°

Find with proof :

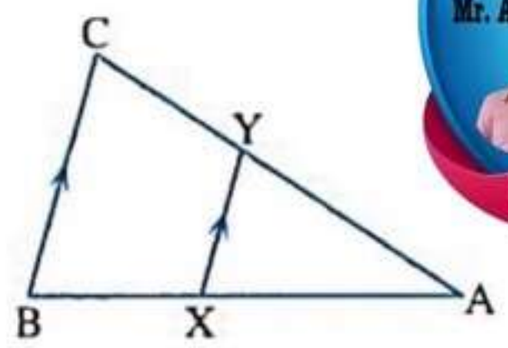
The measures of the angles of Δ ABC



53 **In the opposite figure :**

$\overline{AB} > \overline{BC}$, $\overline{XY} \parallel \overline{BC}$

Prove that : $AX > XY$

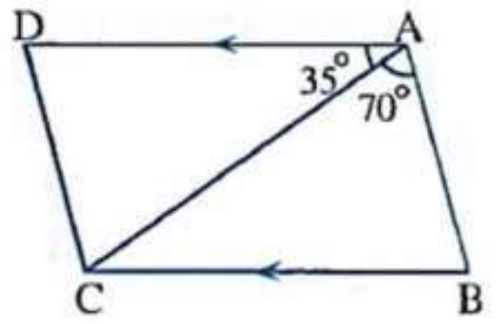


54 **In the opposite figure :**

$\overline{AD} \parallel \overline{BC}$, m (∠ BAC) = 70°

and m (∠ DAC) = 35°

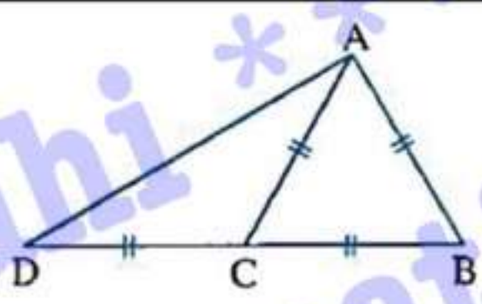
Prove that : $AC > BC$



55 **In the opposite figure :**

$AB = BC = AC = DC$

Prove that : m (∠ BAD) = 90°



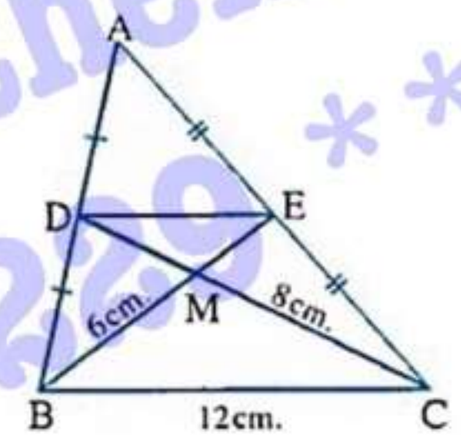
56 **In the opposite figure :**

$\overline{BE}$, $\overline{CD}$ are medians in Δ ABC

, MB = 6 cm. , MC = 8 cm.

, BC = 12 cm.

Find : The perimeter of Δ MDE



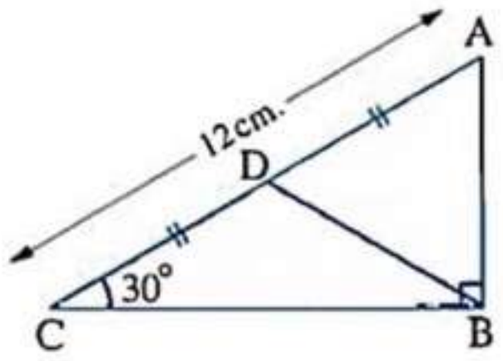
57 **In the opposite figure :**

ABC is a triangle , m (∠ ABC) = 90°

, D is the midpoint of $\overline{AC}$

, AC = 12 cm. , m (∠ C) = 30°

, then find : The perimeter of Δ ABD



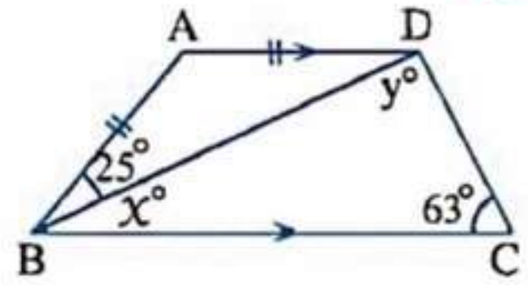
58 **In the opposite figure :**

$\overline{AD} // \overline{BC}$, AD = AB

, m (∠ ABD) = 25° , m (∠ C) = 63°

, m (∠ DBC) = x° , m (∠ CDB) = y°

Find the value of each of : x and y



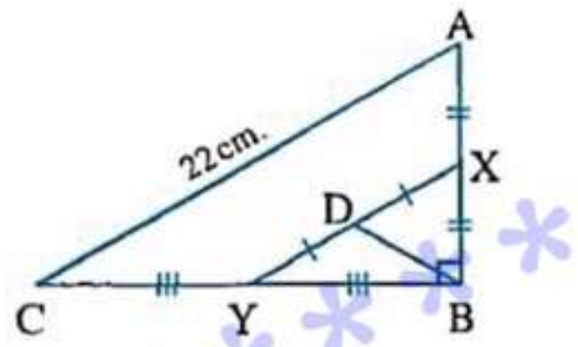
59 **In the opposite figure :**

m (∠ ABC) = 90° , X , Y , D

are the midpoints of $\overline{AB}$, $\overline{BC}$, $\overline{XY}$

respectively , if AC = 22 cm.

, find : BD



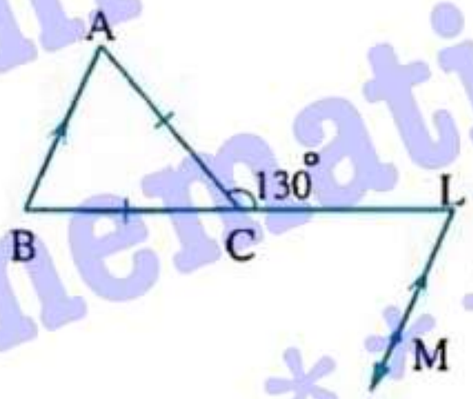
60 **In the opposite figure :**

$C \in \overleftrightarrow{LB}$, AC = BC

, m (∠ LCA) = 130°

, $\overleftrightarrow{LM} // \overleftrightarrow{AB}$

Find : m (∠ MLC)

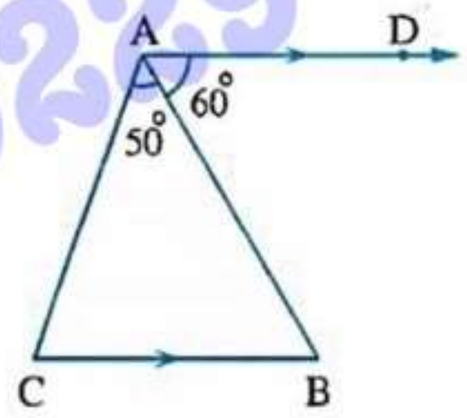


61 **In the opposite figure :**

ABC is a triangle , $\overrightarrow{AD} // \overline{CB}$

, m (∠ DAB) = 60° , m (∠ BAC) = 50°

Prove that : AB > AC

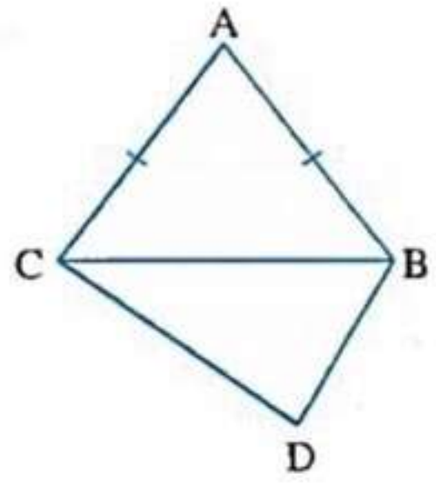


62 **In the opposite figure :**

AB = AC , DC > DB

Prove that :

m (∠ ABD) > m (∠ ACD)

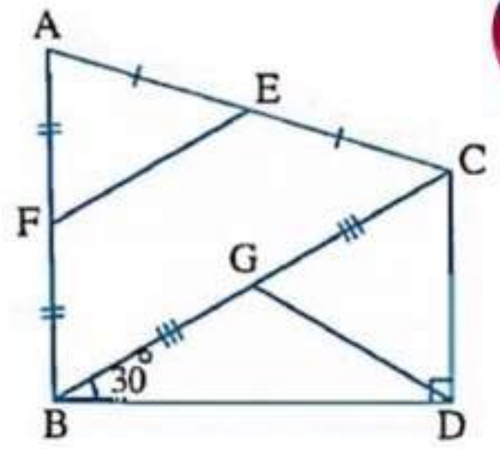


63 **In the opposite figure :**

F , E , G are the midpoints of $\overline{AB}$, $\overline{AC}$, $\overline{BC}$

, m (∠ BDC) = 90° , m (∠ CBD) = 30°

, BC = 10 cm.



1 **Prove that :** FE = DC = GD

2 **Find :** The perimeter of Δ GCD

64 ABC is a triangle in which m (∠ A) = 40° , m (∠ B) = 80° Arrange the lengths of the sides of the triangle descendingly.

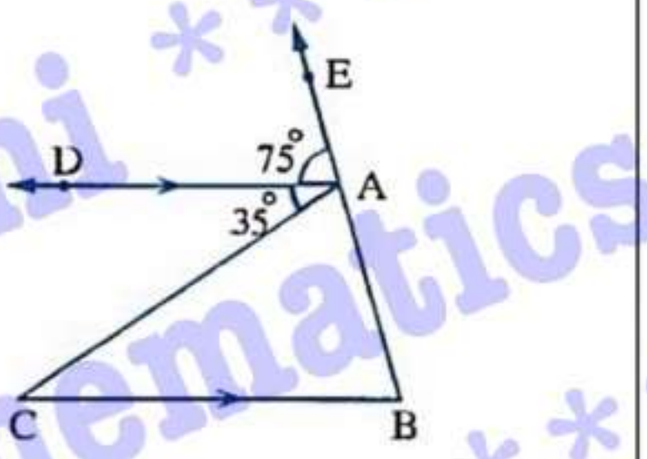
65 **In the opposite figure :**

E ∈ $\overrightarrow{BA}$, $\overrightarrow{AD}$ // $\overline{BC}$

, m (∠ DAE) = 75°

, m (∠ DAC) = 35°

Prove that : BC > AB

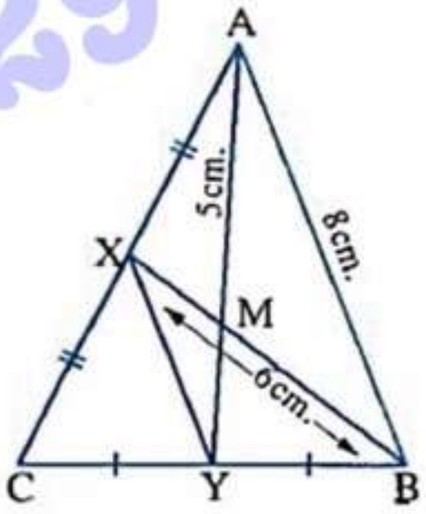


66 **In the opposite figure :**

X is the midpoint of $\overline{AC}$, AB = 8 cm.

, Y is the midpoint of $\overline{BC}$, AM = 5 cm. , BX = 6 cm.

Find : The perimeter of Δ XMY



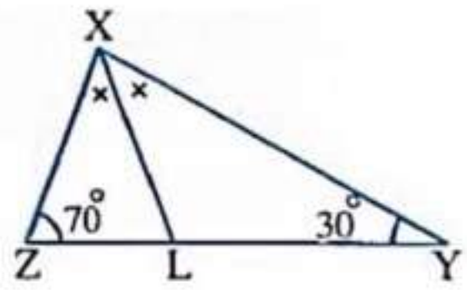
67 **In the opposite figure :**

$\overrightarrow{XL}$ bisects ∠ YXZ , m (∠ Y) = 30°

, m (∠ Z) = 70°

1 **Find :** m (∠ LXZ) and m (∠ XLZ)

2 **Prove that :** Δ XLZ is an isosceles triangle.



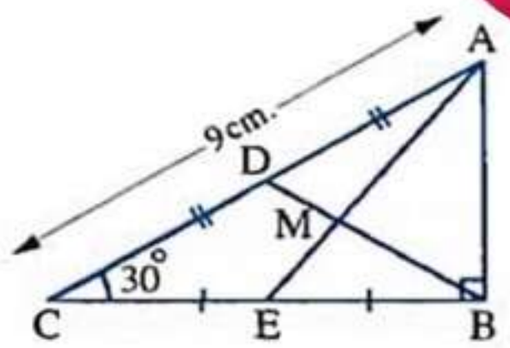
68 **In the opposite figure :**

Δ ABC is a right-angled triangle at B

, m (∠ C) = 30° , D is the midpoint of $\overline{AC}$

, E is the midpoint of $\overline{BC}$, AC = 9 cm.

Find the length of each of : $\overline{BD}$, $\overline{BM}$, $\overline{AB}$, $\overline{MD}$

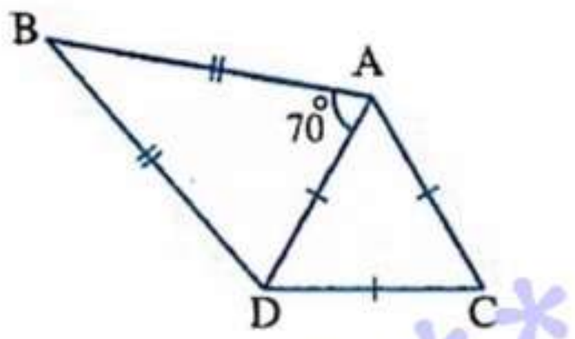


69 **In the opposite figure :**

AB = BD , m (∠ BAD) = 70°

, Δ ADC is equilateral

Find : m (∠ BDC)

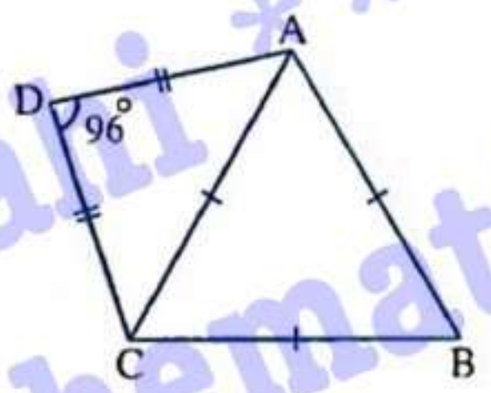


70 **In the opposite figure :**

Δ ABC is equilateral , DA = DC

, m (∠ ADC) = 96°

Find : m (∠ DAB)



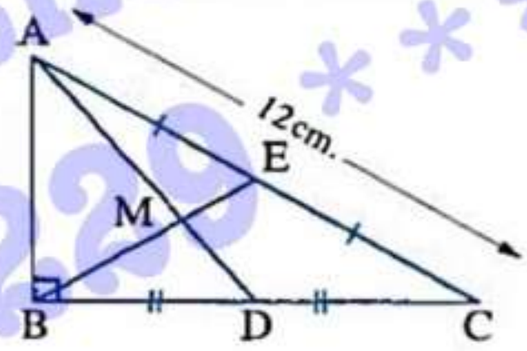
71 **In the opposite figure :**

Δ ABC is right-angled at B

, E and D are the midpoints of $\overline{AC}$ and $\overline{BC}$ respectively

, AC = 12 cm.

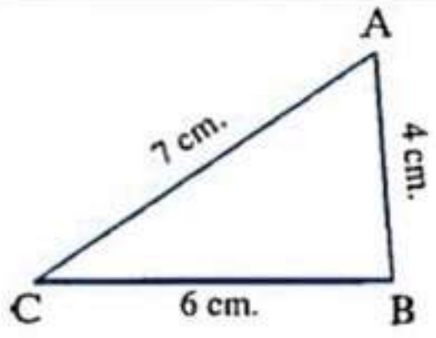
Find the length of each of : $\overline{BE}$ and $\overline{ME}$



72 In Δ ABC : AB = 7 cm. , BC = 5 cm. and AC = 6 cm.
Arrange its angles ascendingly due to their measures.

73 **In the opposite figure :**

Arrange the angles
of Δ ABC descendingly
due to their measures



SECOND: GEOMETRY

Complete:

(1)	If 4 cm and 6 cm are two side lengths of an isosceles triangle, then the length of the 3rd side is …… cm	"8"
(2)	The measure of the exterior angle of the equilateral triangle is ……°	"120"
(3)	In Δ ABC if $m(\angle B) > m(\angle C)$, then AC …… AB	">"
(4)	If two angles of a triangle are congruent, then the two sides opposite to these two angles are …… and the triangle is an ……	"congruent" "isosceles"
(5)	The longest side in the right-angled triangle is the ……	"hypotenuse"
(6)	The bisector of the vertex angle of the isosceles triangle …… the base and …… to it.	"bisect" "perpendicular"
(7)	The isosceles triangle has …… axes of symmetry.	"1"
(8)	The equilateral triangle has … axes of symmetry.	"3"
(9)	The scalene triangle has …… axes of symmetry.	"0"
(10)	Triangle of side lengths 4 cm and 9 cm has one axis of symmetry, then the length of the 3rd side is …… cm	"9"
(11)	The median of the isosceles triangle drawn from its vertex …… the vertex angle and …… to the base.	"bisect" "perpendicular"
(12)	If C ∈ the axis of $\overleftrightarrow{AB}$, then …… = ……	"AC=BC"
(13)	In a triangle, if two sides have unequal lengths, then the longer is opposite to the angle of the ……	"greater measure"

(14)	In a triangle, if two angles are unequal in measure, then the greater angle in measure is opposite to the side of the ……	"greater length"
(15)	In Δ ABC, if $m(\angle A)=120°$, then the longest side is ……	"BC"
(16)	In Δ ABC, if $m(\angle C)=70°$ and $m(\angle B)=60°$, then AB …… AC	">"
(17)	ABC is an isosceles triangle, $m(\angle A)=100°$, then $m(\angle B)=$ ……°	"40"
(18)	ABC is an isosceles triangle, $m(\angle A)=60°$ and its perimeter is 15 cm, then AB=…… cm.	"5"
(19)	If the measure of an angle of the isosceles triangle is 60°, then it's called ……	"equilateral"
(20)	The perpendicular bisector of a line segment is called ……	"axis of symmetry"
(21)	Of the lengths of two sides in a triangle are 2 cm and 7 cm, then the length of the third side is ∈] ……, …… [	"]5,9["
(22)	Any point lies on the axis of a line segment is at …… from its terminals.	"equal distances"
(23)	The length of any side in a triangle is …… the sum of the lengths of the two other sides.	"less than"
(24)	If ABC is a right-angled triangle at B, then the longest side is ……	"AC"
(25)	The triangle which has two angles of measures 45° and 65° has …… axes of symmetry.	"0"
(26)	In Δ ABC, if AB=AC and $m(\angle A)=70°$, then $m(\angle B)=$ ……°	"55"
(27)	In Δ ABC, AB + BC – AC > ……	"0"
(28)	In Δ ABC, if AB > AC, then $m(\angle C)$……$m(\angle B)$	">"
(29)	The base angles of the isosceles triangle are ……	"congruent"

(30)	In the isosceles right-angles triangle, the measure of any angle of its base is ……°	"45"
(31)	If x,7,4 are lengths of sides of a triangle, then …… < x < ……	"3<x<11"
(32)	If the measure of an angle in a right-angled triangle is 45°, then the triangle is ……	"an isosceles"
(33)	The numbers 3,6,…… can be the lengths of sides of an isosceles triangle.	"6"
(34)	The triangle whose side's lengths are 2 cm, 5 cm and (x+3) cm, is an isosceles if x = ……	"2"

Choose the correct answer

(1) The medians of the triangle intersect at …… point.

a 1 b 2 c 3 d 4

(2) The right angled-triangle has …… medians.

a 0 b 1 c 2 d 3

(3) The point of intersection of medians in the triangle divides each of them in the ration …… from the vertex.

a 1:3 b 3:1 c 2:1 d 1:2

(4) The point of intersection of medians in the triangle divides each of them in the ration …… from the base.

a 1:3 b 3:1 c 2:1 d 1:2

(5) If $\overline{AD}$ is a median in Δ ABC, M is the point of intersection of the medians, then AM = …… AD

a $\frac{1}{3}$ b $\frac{2}{3}$ c $\frac{1}{2}$ d $\frac{1}{4}$

(6) If $\overline{AD}$ is a median in ΔABC, M is the point of intersection of the medians, then AM = …… MD

a 2 b $\frac{1}{2}$ c 3 d $\frac{1}{3}$

(7) The length of the median drawn from the vertex of the right angle in the right-angled triangle = …… the length of the hypotenuse.

a 2 b $\frac{1}{3}$ c $\frac{1}{2}$ d 3

(8) The length of the hypotenuse of the right-angled triangle = …… the length of the median which drawn from the vertex of the right angle.

a half b twice c third d quarter

(9) If ΔABC is a right-angled at B, AB=6 cm and BC=8 cm, then the length of the median drawn from B = …… cm

a 10 b 4 c 5 d 3

(10) If ΔABC is a right-angled at B, AC=20 cm, then the length of the median drawn from B = …… cm

a 10 b 8 c 6 d 5

(11) In ΔABC, $m(\angle B)=90°$, AC=12 cm and $\overline{BD}$ is a median, then BD = …… cm

a 12 b 6 c 24 d 10

(12) The length of the side opposite to the angle of measure 30° in the right-angle triangle …… the length of the hypotenuse.

a twice b half c square d equal

(13) In ΔABC, $m(\angle B)=90°$ and $m(\angle A)=30°$, then BC= ……

a $\frac{1}{2}AB$ b $\frac{1}{2}AC$ c 2AB d 2AC

(14) In ΔABC, $m(\angle B)=90°$ and $m(\angle A)=60°$, then $AC=$ ..... AB

a) 2 b) 3 c) $\frac{1}{2}$ d) $\frac{1}{3}$

(15) In ΔABC, $m(\angle B)=90°$, $m(\angle A)=30°$ and $AC=10$ cm, then $BC=$ ..... cm

a) 20 b) 15 c) 10 d) 5

(16) The measure of exterior angle of the equilateral triangle is .....°

a) 30 b) 60 c) 120 d) 180

(17) In ΔABC, if $AB=AC$, then the exterior angle at the vertex C is .....

a) acute b) obtuse c) right d) reflex

(18) In ΔABC, if $AB=AC$ and $m(\angle A)=60°$, if its perimeter is 18 cm, then $BC=$ ..... cm.

a) 18 b) 3 c) 6 d) 60

(19) If the measure of one of the two base angles of the isosceles triangle is 40°, then the measure of its vertex angle is .....°

a) 40 b) 100 c) 80 d) 50

(20) ABC is an isosceles triangle, if $m(\angle A)=100°$, then $m(\angle B)=$.....°

a) 100 b) 180 c) 80 d) 40

(21) In ΔABC, if $AB=AC$ and $m(\angle A)=40°$, then $m(\angle C)=$.....°

a) 40 b) 70 c) 140 d) 50

(22) The triangle which hasn't any axes of symmetry is .....

a) scalene b) isosceles c) equilateral d) otherwise

(23) If Δ ABC has one axis of symmetry and $m(\angle B) = 140°$, then $m(\angle A)$ = ……°

a 30 b 20 c 40 d 60

(24) In Δ ABC, if $m(\angle B) = 65°$ and $m(\angle A) = 50°$, then it has …… axes (axis) of symmetry.

a 0 b 1 c 2 d 3

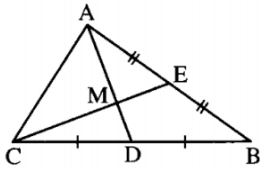
Essay Problems

(1) **In the opposite figure :**

E is the midpoint of $\overline{AB}$, D is the midpoint of $\overline{BC}$

$\overline{AD} \cap \overline{CE} = \{M\}$, MC = 5 cm. and MD = 2 cm.

Find : The length of each of $\overline{AD}$ and $\overline{ME}$.



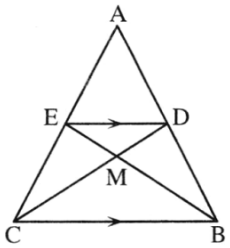
(2) **In the opposite figure :**

ABC is a triangle in which $\overline{CD}$,

$\overline{BE}$ two medians intersects at M ,

if : DC = 9 cm. , BM = 4 cm. , BC = 8 cm.

Find : The perimeter of Δ MDE

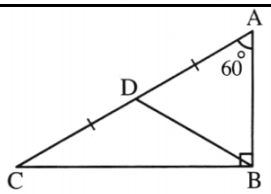


(3) **In the opposite figure :** Δ ABC , AC = 8 cm. ,

m ($\angle$ BAC) = 60° , m ($\angle$ ABC) = 90° ,

D is the midpoint of $\overline{AC}$

Find : The perimeter of Δ ABD



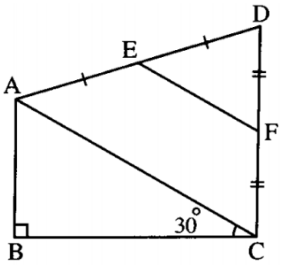
(4) **In the opposite figure :**

m ($\angle$ B) = 90° ,

m ($\angle$ ACB) = 30° ,

E , F are midpoints of $\overline{AD}$, $\overline{DC}$

Prove that : AB = EF



(5)

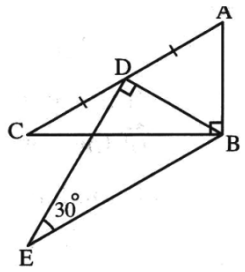
In the opposite figure :

$m(\angle ABC) = m(\angle BDE) = 90°$

, $m(\angle E) = 30°$

, D is the midpoint of $\overline{AC}$

Prove that : AC = BE



(6)

In the opposite figure :

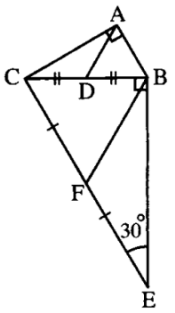
$m(\angle BAC) = m(\angle CBE) = 90°$,

$m(\angle BEC) = 30°$,

D and F are the midpoints of $\overline{BC}$

and $\overline{CE}$ respectively.

Prove that : $AD = \frac{1}{2} BF$



(7)

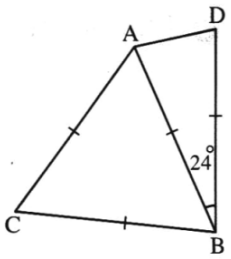
In the opposite figure :

ACBD is a quadrilateral in which :

AB = BC = CA = BD

, $m(\angle ABD) = 24°$

Find : $m(\angle CAD)$



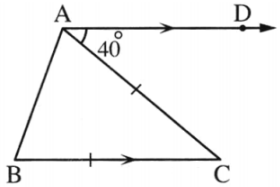
(8)

In the opposite figure :

ABC is a triangle ,

AC = BC , $\overrightarrow{AD}$ // $\overline{BC}$, $m(\angle DAC) = 40°$

Find : The measure of angles in the Δ ABC



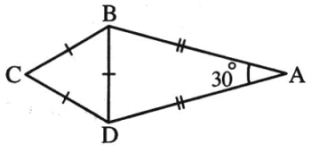
(9)

In the opposite figure :

AB = AD , $m(\angle A) = 30°$,

CB = BD = CD

Find : $m(\angle CBA)$



(10)

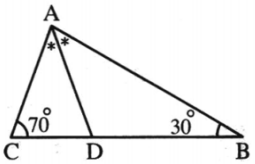
In the opposite figure :

$\overrightarrow{AD}$ bisects ∠ BAC

, $m(\angle B) = 30°$

, $m(\angle C) = 70°$

Prove that : Δ ADC is isosceles triangle.

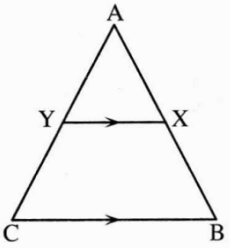


(11) **In the opposite figure :**

ABC is a triangle in which AB = AC , $X \in \overline{AB}$,

$Y \in \overline{AC}$ and $\overline{XY} \parallel \overline{BC}$

Prove that : the triangle AXY is isosceles triangle.



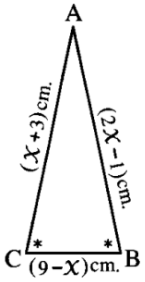
(12) **In the opposite figure :**

m (∠ B) = m (∠ C) , AB = (2 $\mathcal{X}$ – 1) cm.

AC = ($\mathcal{X}$ + 3) cm.

, BC = (9 – $\mathcal{X}$) cm.

Find with proof the perimeter of Δ ABC



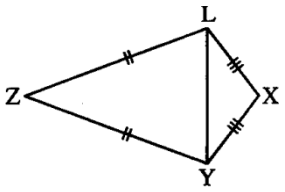
(13) **In the opposite figure :**

XL = XY , ZL = ZY ,

M is the midpoint of $\overline{LY}$

Prove that :

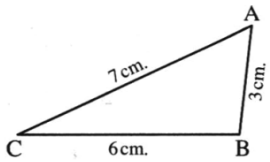
X , M , Z are on the same straight line.



(14) **In the opposite figure :**

Arrange the angles of Δ ABC

descendingly due to their measures

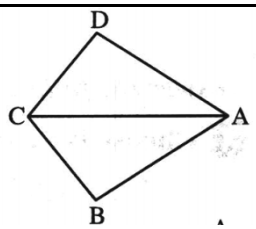


(15) **In the opposite figure :**

AD > DC

and AB > BC

Prove that : m (∠ BCD) > m (∠ BAD)

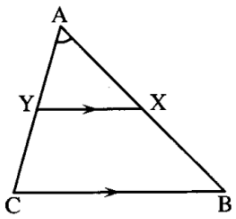


(16) **In the opposite figure :**

ABC is a triangle ,

AB > AC , $\overline{XY} \parallel \overline{BC}$

Prove that : m (∠ AYX) > m (∠ AXY)



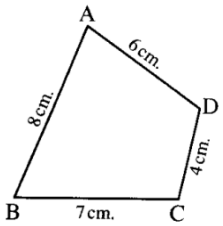
(17) **In the opposite figure :**

AB = 8 cm. ,

BC = 7 cm. ,

CD = 4 cm. , AD = 6 cm.

Prove that : m (∠ BCD) > m (∠ BAD)

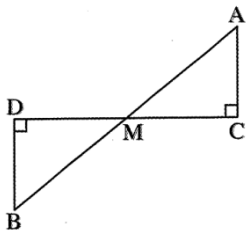


(18) 📖 **In the opposite figure :**

$\overline{AB} \cap \overline{CD} = \{M\}$, $\overline{AC} \perp \overline{CD}$ and $\overline{BD} \perp \overline{CD}$

Prove that :

$AB > CD$



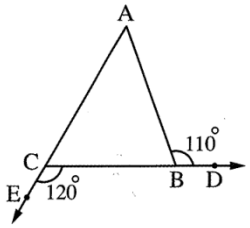
(19) 📖 **In the opposite figure :**

ABC is a triangle , $D \in \overrightarrow{CB}$,

$E \in \overrightarrow{AC}$, $m(\angle ABD) = 110°$

and $m(\angle BCE) = 120°$

Prove that : $AB > BC$

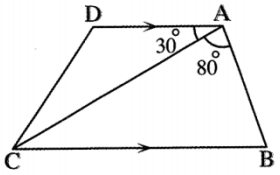


(20) 📖 **In the opposite figure :**

$\overrightarrow{AD} // \overline{BC}$, $m(\angle BAC) = 80°$ and $m(\angle DAC) = 30°$

Prove that :

$BC > AB$

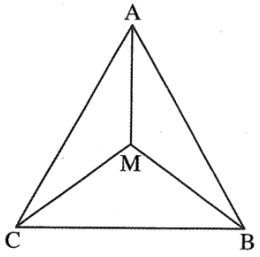


(21) 📖 **In the opposite figure :**

ABC is a triangle in which M is a point inside it.

Prove that :

$MA + MB + MC > \frac{1}{2}$ the perimeter of the triangle ABC



2nd prep Final revision

GEOMETRY

(1)Complete each of the following:

(1) The longest side in the right –angled triangle is ……

(2) If the lengths of two sides in a triangle are 2 cm. and 7 cm , then :

…… < the length of the third side < ……

(3) If the measures of two angles in a triangle are different, then the greater in measure of them is opposite to ……

(4) If the length of the median drawn from a vertex of a triangle equals half the opposite side to this vertex in length, then ……

(5) If the measure of an angle in the isosceles triangle equals 60°, then the triangle is ……

(6) The length of any side in a triangle …… the sum of the lengths of the two other sides.

(7) If $\overline{AB} \equiv \overline{XY}$, then AB = ……

(8) In ▲ ABC, if m (∠ A) = 30° and m (∠ B) = 90° , then BC = …… AC

(9) The axis of symmetry of a line segment is the straight line which …… at its midpoint

(10) The point of concurrence of the median of the triangle divides each median in the ratio …… : …… from the base.

(11) The base angles of the isosceles triangle are ……

(12) In the right –angled triangle, the length of the median drawn from the vertex of the right angle equals ……..

(13) In ▲ ABC, m (∠ C) = 100°, then the longest side in it is ……..

(14) The smallest angle in measure in a triangle is opposite to ……

(15) In the isosceles triangle, if the measure of the vertex angle is 40°, then the measure of each angle of the base angles equals ……..

(16) The measure of the exterior angle of the equilateral triangle is ……..

(17) In ▲ ABC, if m (∠ A) = 50°, m (∠ B) = 60°, then the smallest side of it is ……..

(18) If P ∈ the axis of symmetry of $\overline{BC}$, then PB = ……..

(19) The bisector of the vertex angle of an isosceles triangle is …… to the base and bisect it.

(20) A cuboid of total area 148 cm^2. and its lateral area is 110° cm^2 then the area of its base is ……..

(21) The medians of a triangle are ……..

(22) The base angles in an isosceles triangle are ……

(23) If m (∠ A) = 155°, then m (reflex ∠ A) equals ……..°

(24) If the measure of an angle in isosceles triangle equals 60° then the triangle is ……..

(25) If the measure of one of the angles in the right-angled triangle is 45°, then the number of axes of symmetry of it is ……..

(26) ABC is a triangle in which AB = 4 cm, CB = 7 cm, then AC ∈] ……. , ……..[

(27) The point that divides the median of the triangle in the ratio 1 : 2 from the base is the point of intersection of ……..

(28) In ▲ ABC, if AB > BC, then m (∠ A) < m (∠ .....)

(29) The sum of measures of accumulative angles at point is .....°

(30) If two side lengths in a triangle are 4 cm, 7 cm, then the length of the third side ∈] ..... , ...[

(31) The point which equidistance from the terminal of a line segment lie on .....

(32) In ▲ ABC if m (∠ A) = 105°, m (∠ B) = 60°, then the longest side in triangle is .....

(33) If $\overline{AB} \equiv \overline{XY}$ and AB = 5 cm. then 2 AB – XY = ...

(34) In a triangle, if two angles are unequal in measure, then the greater angle in measure is opposite .....

(35) If $\overline{AD}$ is a median in ▲ ABC, and M is a point of intersection of its medians and AM = 12 cm, then AD = ...

(36) The type of the triangle which has no lines of symmetry is .....

(37) The measure of straight angle equals .....°

(38) 3 cm, 8 cm. and ..... cm, are three sides length of an isosceles triangle.

(39) The supplement of an angle of measure 30 is an angle of measure .....°

(40) In ▲ ABC, if AB = AC and m (∠ A) = 80°, then m (∠ B) = m (∠ .....) = ...°

(2)Choose the correct answer:

(1) ▲ ABC is equilateral, then m (∠ ACD) = ...

(a) 45° (b) 60° (c) 120° (d) 135°

(2) The lengths which can be lengths of sides of a triangle are ……

(a) 0, 3, 5 (b) 3, 3, 5 (c) 3, 3, 6 (d) 3, 3, 7

(3) The triangle in which the measures of two angles of it are 42° and 69° is ……

(a) an isosceles triangle (b) an equilateral triangle

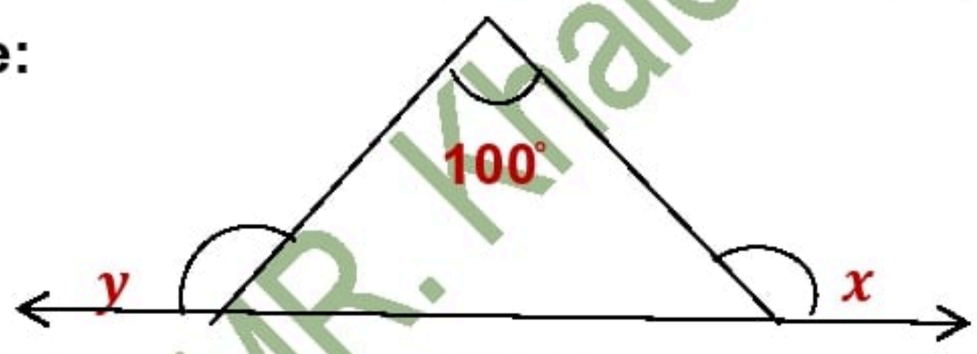
(c) a scalene triangle (d) a right –angled triangle

(4) The sum of lengths of two sides in a triangle is …… The length of the third side

(a) greater than (b)smaller than (c) equals to (d) twice

(5) In the opposite figure:

$x + y$ = ……



(a) 100° (b) 140° (c) 180° (d) 280°

(6) The length of the side opposite to the angle measure 30° in the right-angled triangle equals …… the length of the hypotenuse

(a) $\frac{1}{2}$ (b) $\frac{1}{3}$ (c) $\frac{1}{4}$ (d) 2

(7) If the sum of measures of two congruent angles in a triangle = $\frac{2}{3}$ the sum of measures of its angles, then the triangle is ……

(a) Isosceles (b) equilateral (c) scalene (d) right –angled

(8) In the square ABCD, $\overleftrightarrow{BD}$ is the symmetry axis of ……

(a) $\overline{AB}$ (b) $\overline{AC}$ (c) $\overline{AD}$ (d) $\overline{CD}$

(9) In ▲ XYZ, if XY = XZ, then the exterior angle at the vertex Z is ……

(a) acute (b) obtuse (c) right (d) reflex

(10) If ▲ ABC is a right-angled at B, AC = 20 cm, then the length of the median from B equals ……

(a) 10 cm (b) 8 cm (c) 6 cm (d) 5 cm

(11) The number of axis of symmetry of an equilateral triangle is ….

(a) 2 (b) 3 (c) zero (d) 1

(12) The acute angle supplements …… angle

(a) an acute (b) an obtuse (c) a right (d) a reflex

(13) XYZ is a triangle which m (∠ Z) = 70° and m (∠ Y) = 60°, then

YZ …… XY

(a) < (b) > (c) = (d) ≥

(15) The triangle which has 3 axis of symmetry is ……

(a) Isosceles (b) equilateral (c) scalene (d) right –angled

(16) The point of concurrence divide the median in the ratio ……from the vertex

(a) 1 : 2 (b) 1 : 3 (c) 2 : 1 (d) 3 : 1

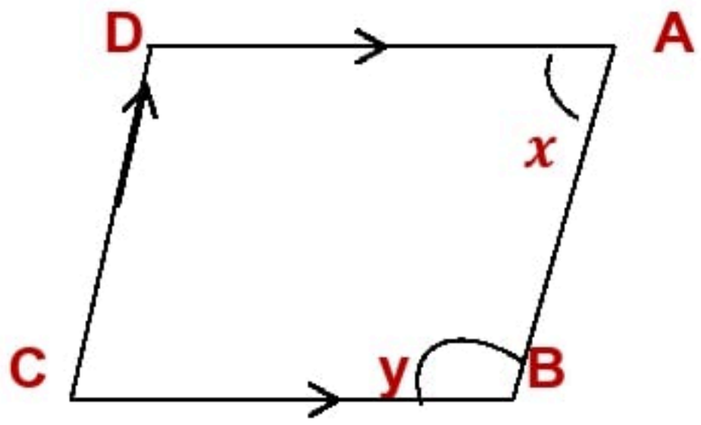
(17) The diagonals are perpendicular in ……

(a) Trapezium (b) parallelogram (c) square (d) triangle

(18) If ABCD is a parallelogram

x : y = 1 : 2

Then m (∠ C) = …… .



(a) 60° (b) 120° (c) 180° (d) 360°

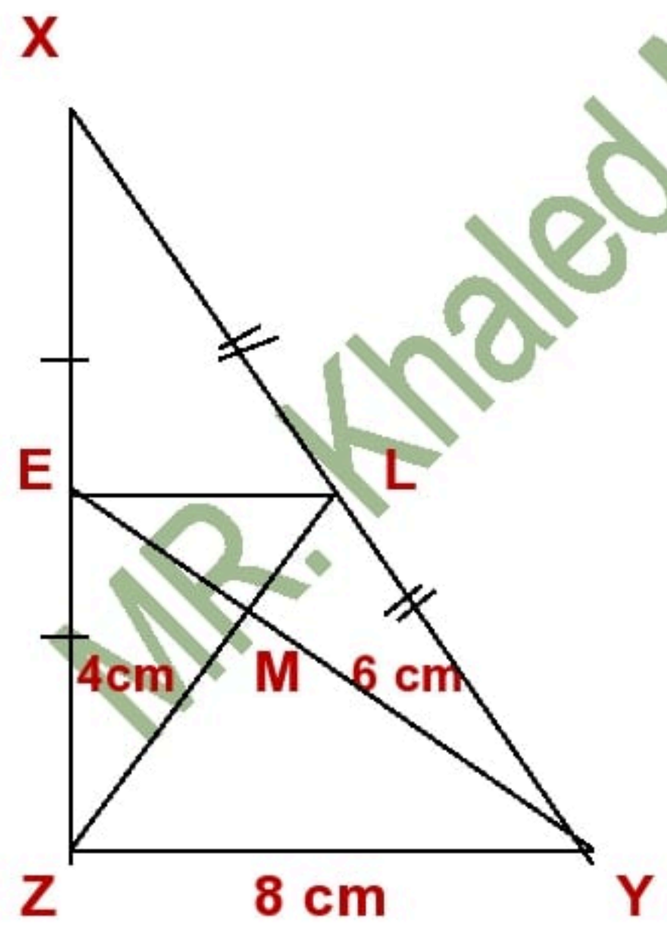
(19) The circumference of a circle = ……

(a) 2π r (b) π r (c) 4 π r (d) 2π d

(20) If ABCD is a square, AB = 2 cm, then $(AC)^2$ = …… cm^2

(a) 2 (b) 4 (c) 8 (d) $2\sqrt{2}$

(3)In the opposite figure:



-

▲ XYZ in which L and E are midpoints of XY, XZ respectively,

YE ∩ ZL = {M} , YZ = 8 cm, YM = 6 cm, ZM = 4 cm.

Find: the perimeter of ▲ MLE

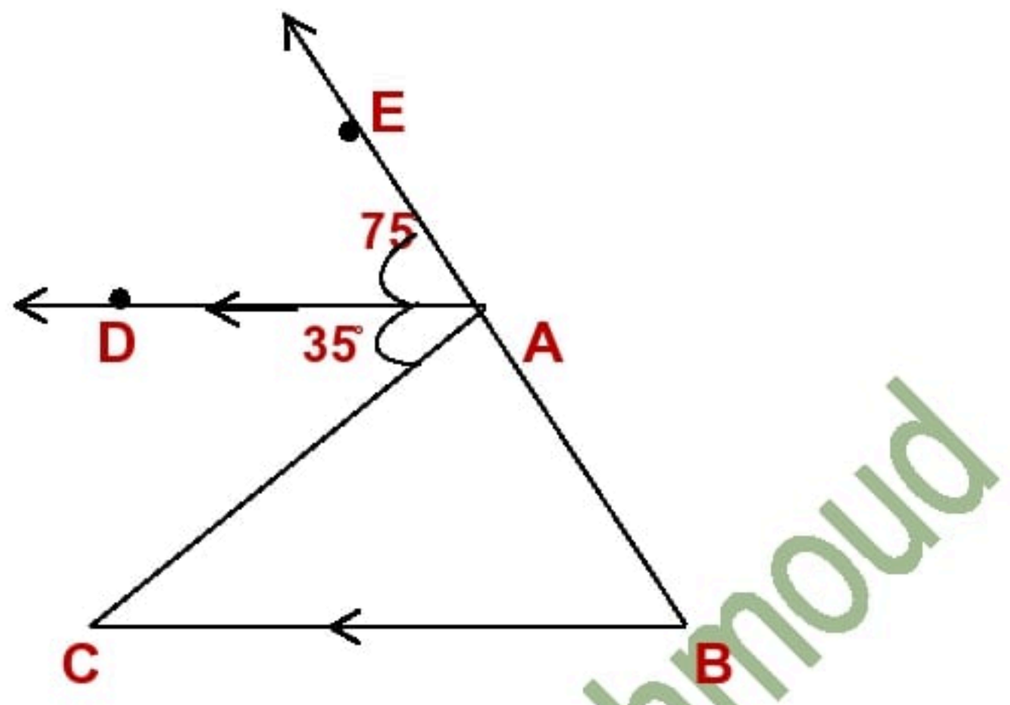
(4)In the opposite figure:

ABC is a triangle, E $\in \overrightarrow{BA}$,

$\overrightarrow{AD}$ // $\overrightarrow{BC}$, m (∠ CAD) = 35°,

m (∠ DAE) = 75°

Prove that: AC > AB

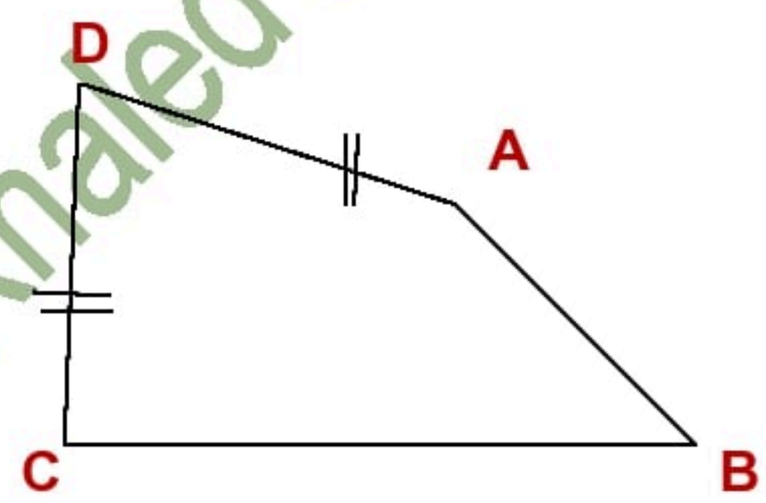


(5)In the opposite figure:

ABCD is a quadrilateral in which AD = CD,

BC > AB

Prove that: m (∠ A) > m (∠ C)



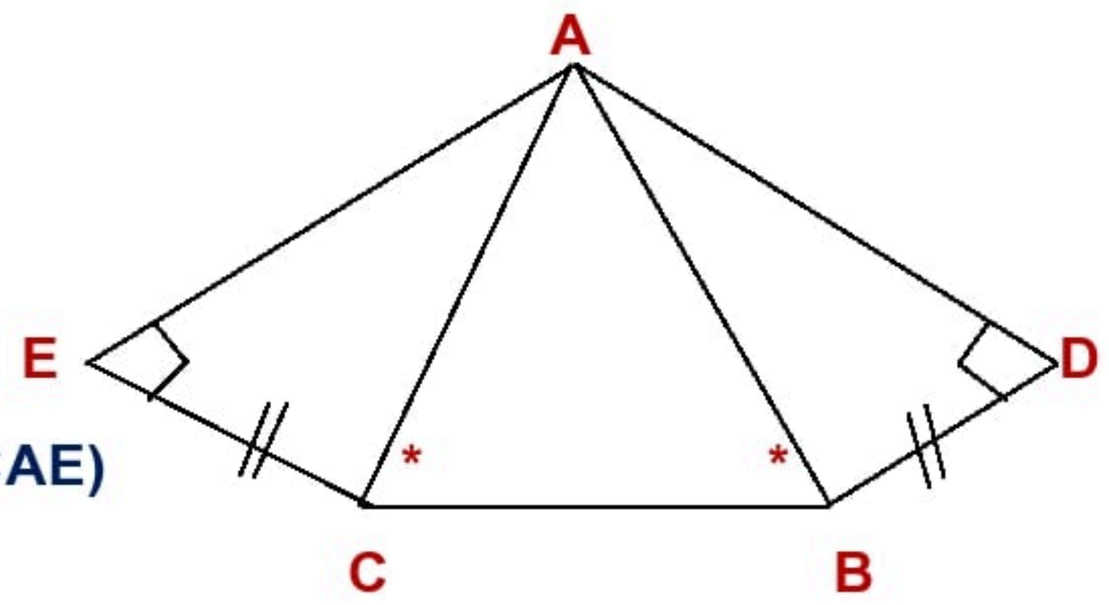
(6)In the opposite figure:

BD = CE,

m (∠ ABC) = m (∠ ACB),

m (∠ D) = m (∠ E) = 90°

Prove that: m (∠ DAB) = m (∠ CAE)



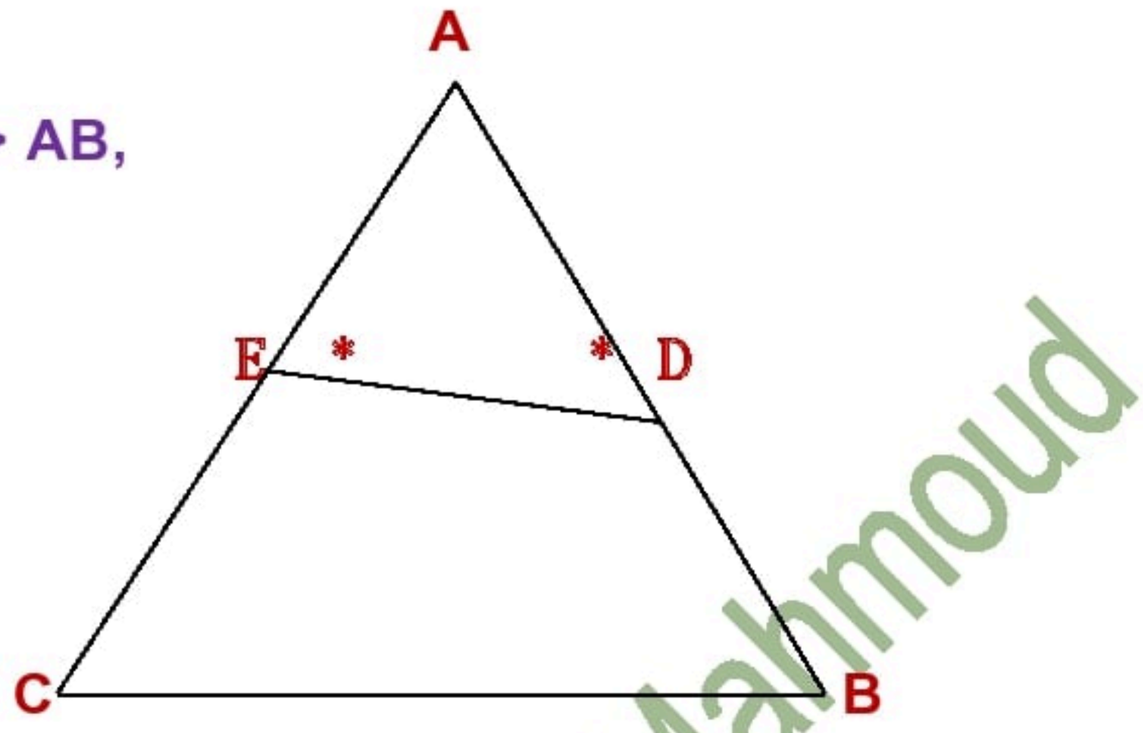
(7)In the opposite figure:

ABC is a triangle in which AC > AB,

$D \in \overline{AB}$, $E \in \overline{AC}$

Where m (∠ ADE) = m (∠ AED)

Prove that: EC > DB



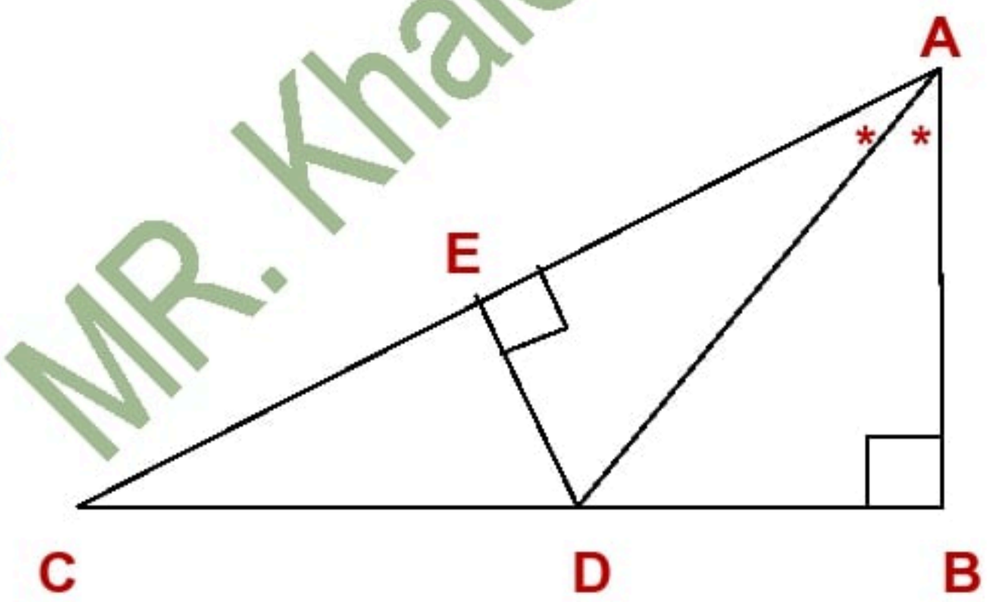
(8)In the opposite figure:

m (∠ ABC) = 90°,

$\overline{DE} \perp \overline{AC}$ and $\overrightarrow{AD}$ bisect ∠ BAC

Prove that:

(1) BD = DE (2) DC > BD



(9)In the opposite figure:

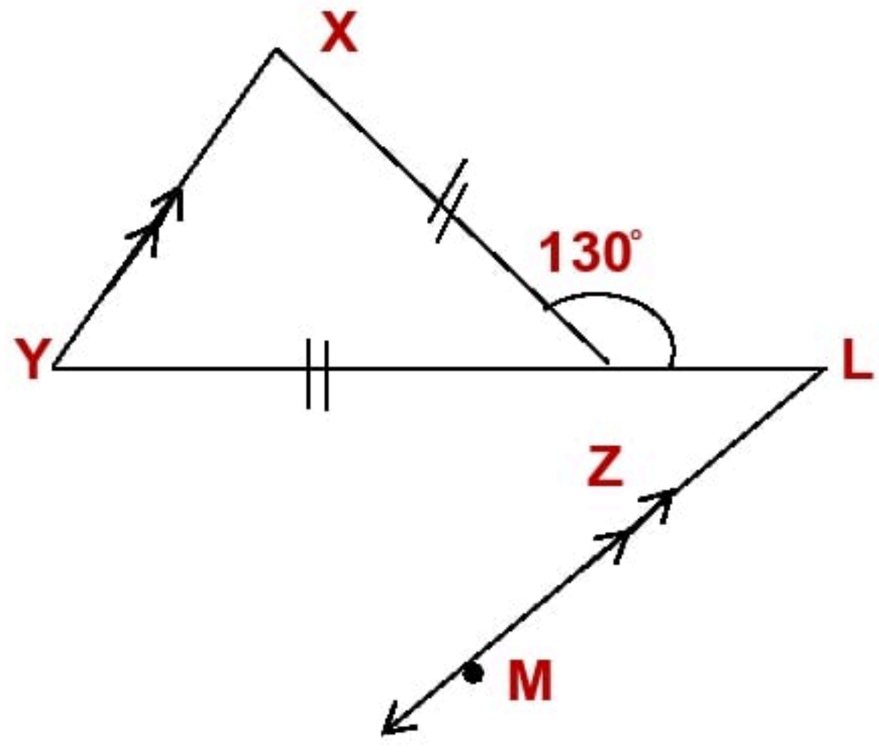
$Z \in \overline{LY}$,

X Z = Y Z ,

m (∠ LZX) = 130°

$\overrightarrow{LM} // \overline{XY}$

Find: m (∠ MLY)



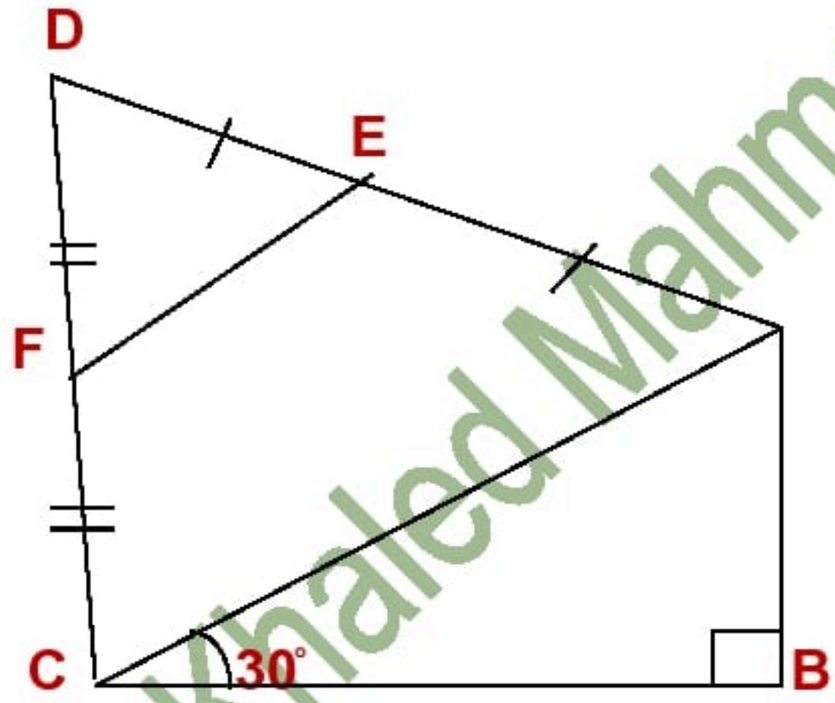
(10)In the opposite figure:

m (∠ B) = 90°,

m (∠ ACB) = 30°

If E and F are the midpoints of $\overline{AD}$ and $\overline{CD}$ respectively,

Prove that: AB = EF



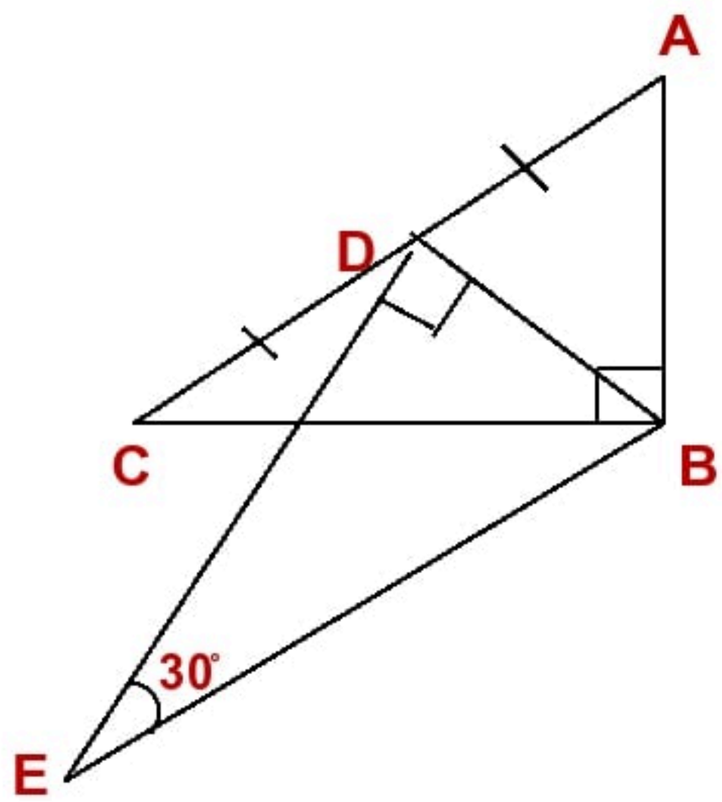
(11)In the opposite figure:

m (∠ ABC) = m (∠ BDE) = 90°,

m (∠E) = 30°,

D is the midpoint of $\overline{AC}$

Prove that: AC = BE



1) Complete the following:

1) The longest side in the right angle triangle is .....
2) If the lengths of two side in a triangle are 2 cm . and 7 cm ,
then .....< the length of third side < .....
3) If the measure of two angles in a triangle are different, then the greater measure of this opposite to .....
4) If the median drawn from a vertex of a triangle equal half the opposite side to this vertex in length, then .....
5) If the measure of an angle in the isosceles triangle equal 60°, then the triangle is .....
6) If the measure of an angle in right angle triangle is 45° then the triangle is .....
7) The length of any side in a triangle .....the sum of lengths of the two other sides.
8) In Δ ABC of m (∠ A) =30° and m(∠ B) =90° , then BC = ... AC
9) The axis of symmetry of a line segment is the straight line which ..... at its midpoint
10) The number of axes of symmetry in the equilateral triangle equals .....
11) The length of median which is drawn from the vertex of the right angle in the right angle triangle equals .....
12) The bisector of the vertex angle of the isosceles triangle .....
13) If the measure of one of angle of the right angle triangle is 45° , then the triangle is .....
14) The two bases angles of the isosceles triangle are .....
15) The measure of the exterior angle of equilateral triangle is .....
16) The median of the triangle intersect at .....

17) The perpendicular which is drawn from the vertex of an isosceles triangle to its bases .....

18) If the length of two sides in an isosceles triangle are 12 cm .and 6 cm , then the length of the third side equals ..... cm

19) The longest side of the right angle triangle is .....

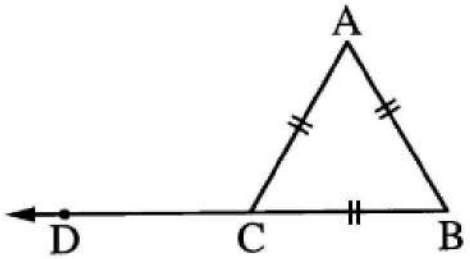
20) If the lengths of two side in an isosceles triangle are 6 cm , and 3 cm then length of third side equals .....

21) The angle of equilateral triangle are ..... in measure and the measure of each of its two base angles equal .....

22) In Δ DEF if m (∠ E) = 125° , then the longest side in this triangle is .....

Choose the correct answer from the given ones:

23) Δ ABC is equilateral , then m (∠ ACD



a) 45° b) 60°

c)120° d)135°

24) In Δ ABC which is right angle at B if AC = 20 cm , then the length of the median of the triangle drawn from B equals .....

a)10 cm b) 8 cm c) 6 cm d) 5 cm

25) XYZ is a triangle in which: m (∠ Z) = 70° and m (∠ Y) = 60° , then YZ .....XY

a) > b) < c)= d) twice

26) The lengths which can be lengths of sides of a triangle are .....

a) 0 , 3 , 5 b) 3 , 3 , 5 c) 3 , 3 , 6 d) 3 , 3 , 7

27) The triangle in which the measure of two angles of its are 42° and 69° is .....

a) an isosceles triangle b)an equilateral triangle

c) a scalene triangle d) a right angle triangle

28) The triangle which has three axes of symmetry is .....triangle

a) scalene b) isosceles c) right angled d)equilateral

29) The sum of lengths of two sides in triangle is ..... the length of the third side

a) greater than b) smaller than c)equal to d) twice

30) In Δ ABC if m (∠ B) = 130° , then the longest side of it is .....

a) BC b) AC c) AB d) its median

31) Δ XYZ I an isosceles triangle in which : m(∠ X) = 100° , then m (∠ Y) = ...°

a) 100 b) 80 c) 60 d) 40

32) The measure of exterior angle of the equilateral triangle equals ..... °

a) 60 b) 90 c) 100 d) 120

33) The number of axes of symmetry of the isosceles triangle equals .....

a) three b) two c) one d) no one

34) Δ ABC m (∠ A) = 50° , m (∠ B) = 60° , then the longest side of it is .....

a) AB b) AC c) BC d) CB

35) Δ XYZ is right angle at Y , then XZ ..... YZ

a) > b) < c) = d) ≤

36) The length of the median drawn from the vertex of the right angle in the right angle triangle = ...hypotenuse

a) third b) quarter c) half d) twice

37) The number of axes of symmetry of the isosceles triangle is .....

a) zero b) 1 c) 2 d) 3

38) The numbers 5 , 4 , ...can be length of sides of a triangle

a) 8 b) 9 c) 10 d) 12

39) If the length of two sides of an isosceles triangle are 13 cm and 6 cm , then the length of third side is .....cm

a) 13 b) 8 c) d) 6

40) F the measure of two angles in triangle are 50° , 80° then the triangle is .....

a) scalene b) an isosceles triangle

c) an equilateral triangle d) a right angled triangle

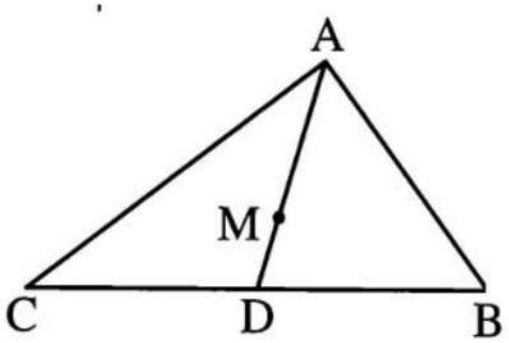
41) In the opposite side figure

AD is a median in Δ ABC

M is the point of intersection of

The median , MD = 2 cm ,

Then AD = ……..cm



a) 2 b) 4 c) 6 d) 8

42) If the measure of one of the two base angles in the isosceles triangle is 040° , then the measure of the vertex angle is ……..°

a) 100 b) 55 c) 70 d) 110

43) Which of the following number can be the lengths of sides of a triangle?

a) 4 , 6 , 10 b) 4 , 6 , 8 c) 2 , 3 , 6 d) 4 , 5 , 10

44) The number of axes of symmetry of the isosceles triangle equals ……

a) 3 b) 2 c) 1 d) zero

45) If Δ ABC is right angle triangle at B , AB = 6 cm and BC = 8 cm , then the length of the median drawn from B is …… cm

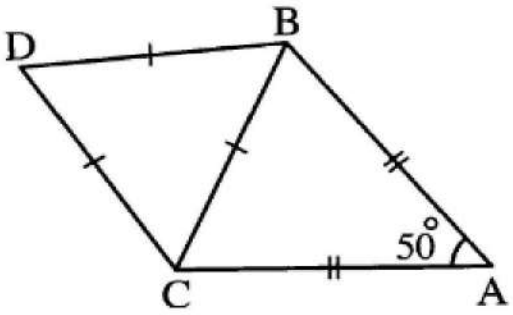
a) 10 b) 8 c) 6 d) 5

46) Δ ABC in which m(∠ B) > m(∠ C) , then AC …….. AB

a) Greater than b) smaller than

c) equals d) smaller than or equals

2) In the opposite figure :

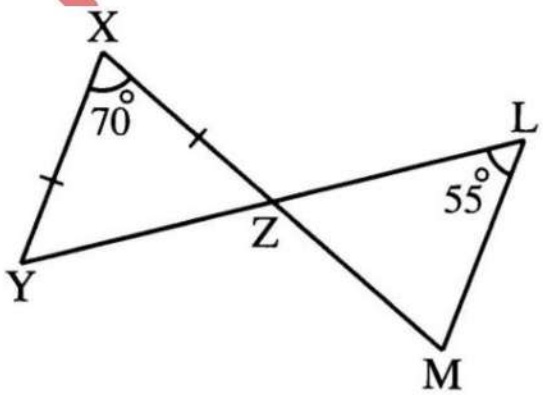


m (∠ A) = 50° AB = AC

and Δ ABC is equilateral

Find: m (∠ ABD)

In the opposite figure :

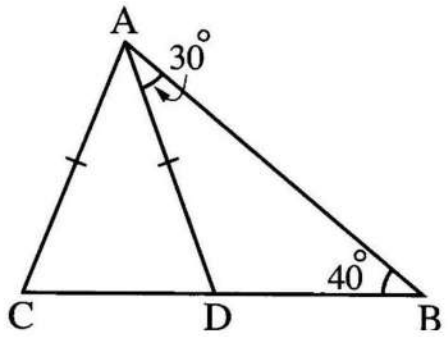


XZ =XY , m (∠ ZLM) = 55°

, m (∠ X) = 70°

Prove that: ML = MZ

3) In the opposite figure :

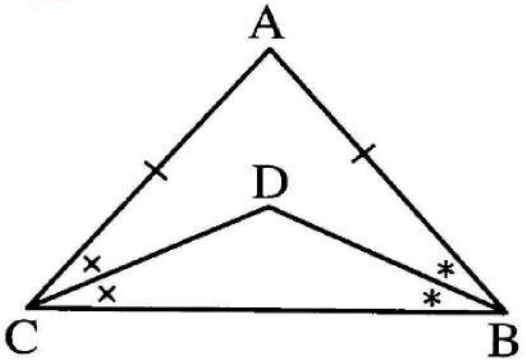


AD =AC , m(∠ B) = 40°,

m (∠ BAD) = 30° , B ∈ CD

Prove that : AB = CB

4) In the opposite figure :



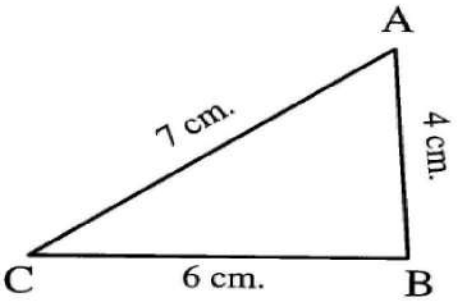
AB = AC , BD bisects CB

and CD bisect ∠ C

prove that : Δ ABC is an isosceles

5) In the opposite figure :

Arrange the angles of Δ ABC is descending due to their measure



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6) In Δ ABC: AB = 7cm BC = 5 cm and AC = 6 cm, Arrange the angles of Δ ABC is descending due to their measure

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7) In Δ ABC: m (∠ A) =40° and m (∠ B) = 80°, Arrange the lengths of the sides of the triangle ABC discerningly

.....

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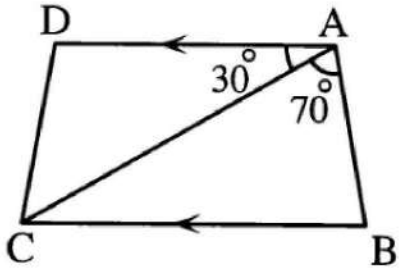
8) In the opposite figure:

AD // BC , m(∠BDC) = 70°

m(∠ E) = 30° ,

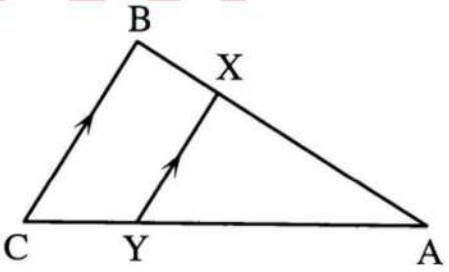
Prove that: AC > BC



9) In the opposite figure:

AB> BC , XY // BC

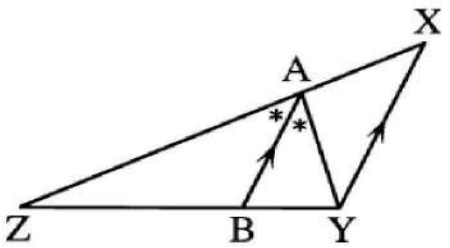
Prove that: AX > XY



10) In the opposite figure:

AB // XY , AB bisects ∠ YAZ

Prove that : XZ > YZ

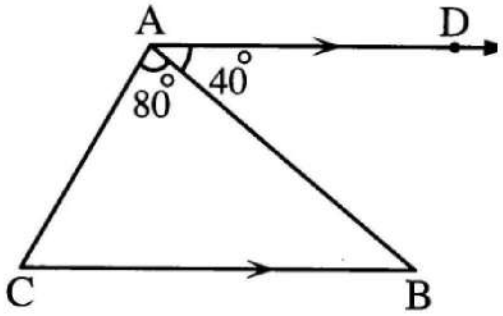


11) In the opposite figure:

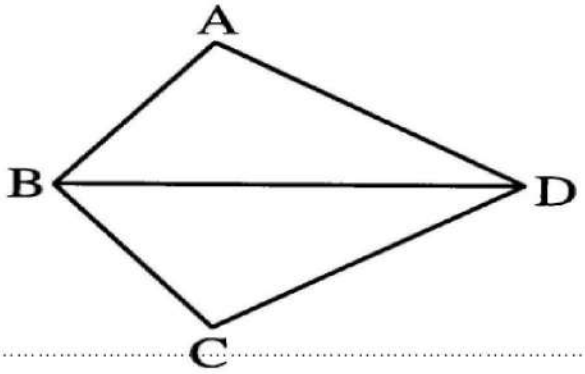
Δ ABC in which AD // CB

m (∠ DAB) = 40° , m(∠ BAC) =80°

prove that: AB > AC



12) In the opposite figure:

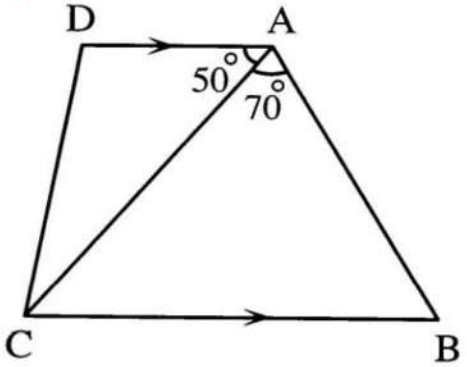


AB > AD , BC < CD

Prove that:

m (∠ ABC) > m (∠ ADC)

13) In the opposite figure:



AD // BC, m (∠ BAC) = 70°

m (∠ DAC) = 50°

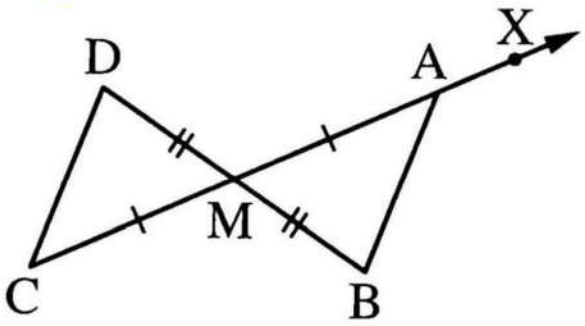
Prove that: BC > AC

14) In the opposite figure:

M is the midpoint of each of AC and BD

Let X ∈ CA **Prove that:**

m (∠ BAX) > m (∠ D)



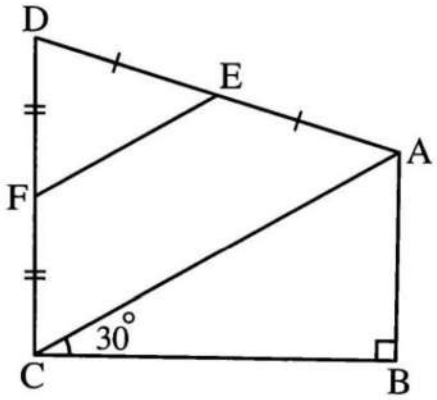
15) In the opposite figure:

m (∠ B) =90° , m (∠ ACB) = 30° ,

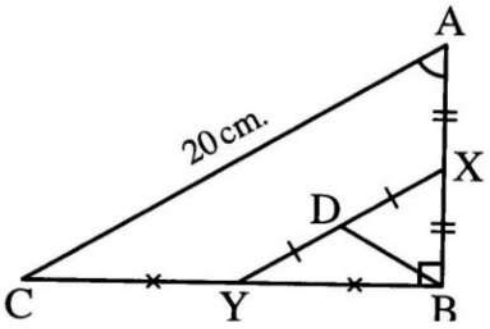
E is the midpoint of AD ,

F is the midpoint of CD

Prove that: AB = EF



16) In the opposite figure:



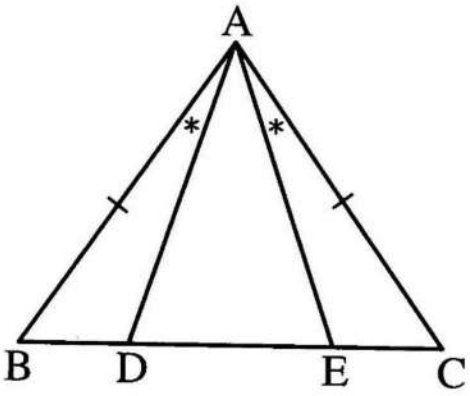
m (∠ ABC) = 90° ,X is the mid point of AB

Y is the midpoint of BC

D is the midpoint of XY, AC = 20 cm

Find the length of: BD

17) In the opposite figure:



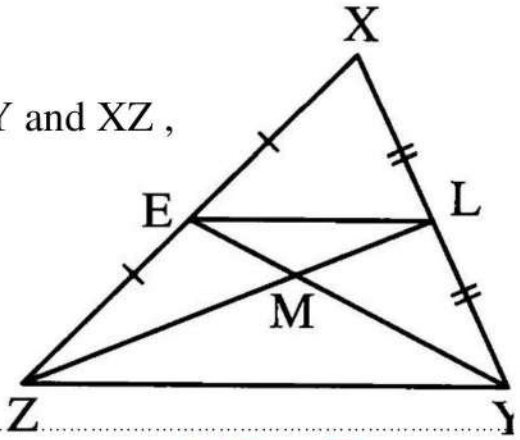
AB =AC, m (∠ BAD) = m (∠ CAE)

Prove that:

a) AD = AE

b) BD = CE

18) In the opposite figure:



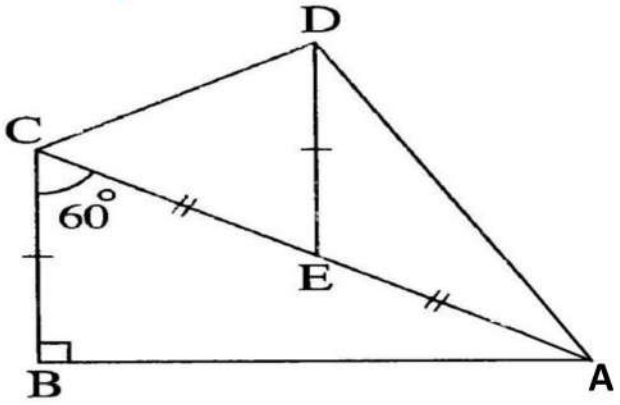
Δ XYZ in which : L and E are the midpoint of XY and XZ ,

YE ∩ ZL = {M} ,YZ = 8 cm ,

YM = 6 cm , ZM = 4 cm

Find the perimeter of: Δ MLE

19) In the opposite figure:

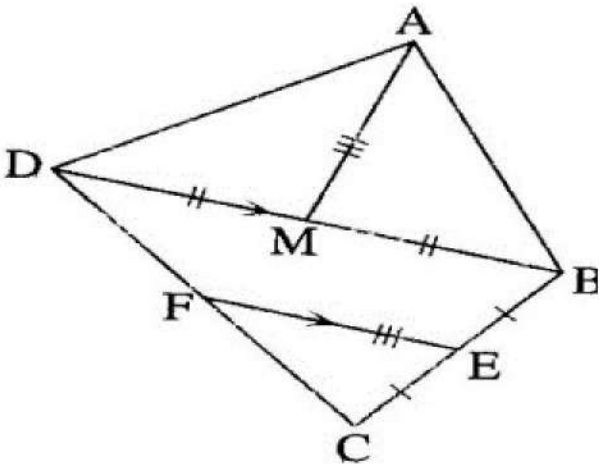


ABC is a right angled triangle at B,

m (<ACB) = 60°,

Prove that: m (<ADC) = 90°

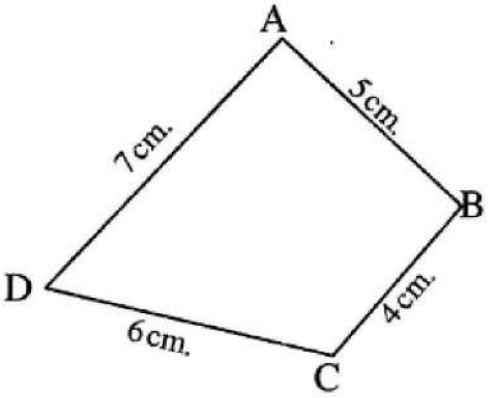
20) In the opposite figure:



ABC is a triangle, M is the midpoint at $\overline{BD}$, E is the midpoint at $\overline{BC}$, F ∈ $\overline{CD}$,$\overline{EF}$ // $\overline{BD}$ and AM = EF

Prove that: m (<BAD) = 90°

21) <u>In the opposite figure:</u>



ABCD is quadrilateral in which:

AB = 5 cm, BC = 4 cm, CD = 6 cm, DA = 7 cm

Prove that:

1) m (∠ABC) > m(∠ ADC)
2) m (∠ BCD) > m (∠BAD)

Part (1)

(1) Complete:

1) The measure of the exterior angle of equilateral Δ = ……
2) The length of the side opposite to the angle whose measure 30° in the right-angled Δ = ……
3) The longest side in the right-angled Δ is ……
4) The point of intersection of the medians of Δ divides each median in the ratio 1 : 2 from ……
5) Number of axes of symmetry in isosceles Δ is ……
6) The length of the median drawn from the right angle in the right-angled Δ equal ……
7) In Δ ABC if AB = AC & m (∠ A) = 40°, then m (∠ C) = ……
8) In Δ ABC, if $\overline{AD}$ is a median & AD = 6 cm & M is the point of the intersection of the medians, then MA = …… cm
9) The axis of symmetry of a line segment is the straight line which ……
10) In Δ XYZ, if XY = XZ, $\overline{XL} \perp \overline{YZ}$, then $\overline{XL}$ bisects each of …… & ……
11) In Δ ABC, if AB = AC, then the point A lies on the axis of symmetry of ……
12) In Δ LMN, if m (∠ L) = 30°, m (∠ N) = 60° MN = 4 cm, then LN = …… cm
13) Number of axes of symmetry of equilateral Δ is ……

14) An isosceles Δ one of its base angles has measure 50°, then the measure of the vertex angle = ……

15) $\overline{AD}$ is a median in Δ ABC & M is the point of intersection of the medians then AM = …… AD

16) The base angles of the isosceles Δ are ……

17) The bisector of the vertex angle of an isosceles Δ …… & ……

18) The straight line that perpendicular to the midpoint of a line segment is called ……

19) The number of axes of symmetry of the scalene Δ is ……

20) The intersection point of the medians of Δ divides each median in the ratio ……from the base.

21) Any point on the axis of symmetry of a line segment is equidistant from ……

22) If ABC is a right-angled Δ at B & AB = $\frac{1}{2}$ AC, then m (∠ C) = ……

23) In Δ ABC, AB = AC, m (∠ C) = 70°, then m (∠ A) = ……

24) $\overline{AD}$ is a median in Δ ABC, M is the point of intersection of the medians, then AM = ……MD

25) The sum of measures of any consecutive angles in the parallelogram = ……

26) If A ∈ the axis of symmetry of $\overline{BC}$, then AB = ……

27) The medians of a Δ intersect at …… point.

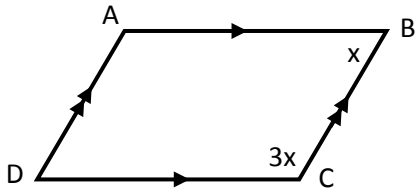
28) The medians of a Δ are ……

29) The median of the isosceles Δ drawn from the vertex bisects ..... & perpendicular to .....

30) In the opposite figure:

ABCD is a parallelogram

then x = ...°

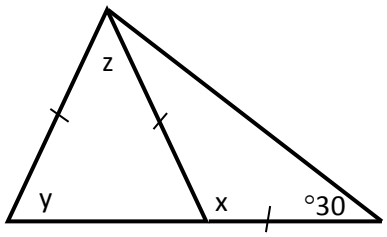


31) In the opposite figure:

x = ...°

y = ...°

z = ...°



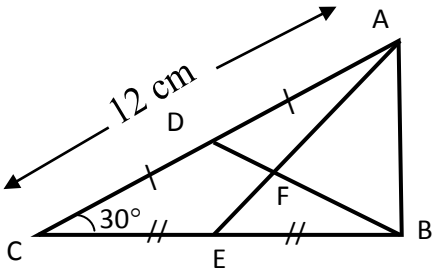
(2) In the given figure:

Δ ABC right-angled Δ at B,

AC = 12 cm, m (∠ C) = 30°

EC = EB, AD = DC

Find with proof:



1) The perimeter of Δ ABD

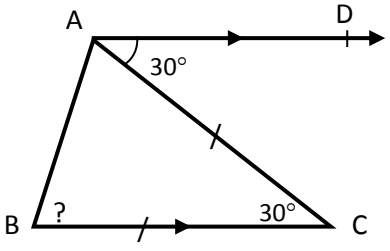
2) The length of $\overline{DF}$

(3) ABC is Δ in which

AC = BC, $\overline{BC}$ // $\overline{AD}$

m (∠ DAC) = 30°

Find m (∠ ABC)



(4) In the given figure:

D is the midpoint of $\overline{AB}$

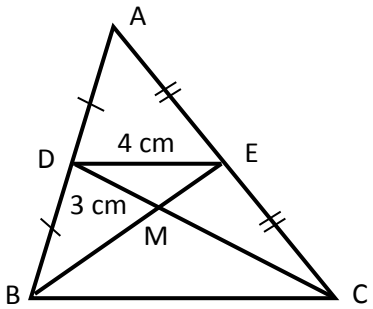
E is the midpoint of $\overline{AC}$

$\overline{BE} \cap \overline{DC}$ = {M} if

DE = 4 cm , DM = 3 cm

BE = 6 cm

Find: the perimeter of Δ BMC



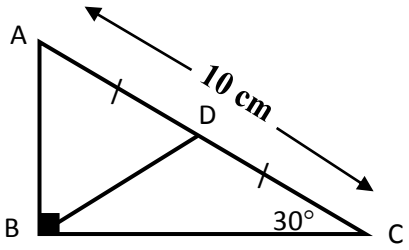
(5) ABC is right-angled Δ at B

m ($\angle$ C) = 30°, D is the midpoint of $\overline{AC}$,

If AC = 10 cm

Find:

The length of $\overline{AB}$, $\overline{BD}$ & the perimeter of Δ ABD

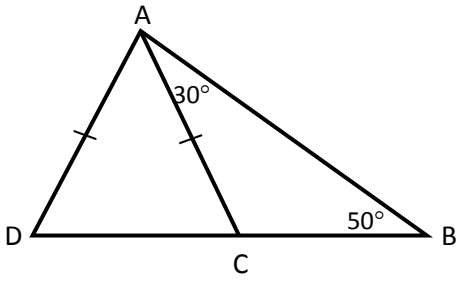


(6) In the opposite figure:

m ($\angle$ B) = 50° , m ($\angle$ BAC) = 30°

and AC = AD

Find by proof: m ($\angle$ D) , m ($\angle$ CAD)



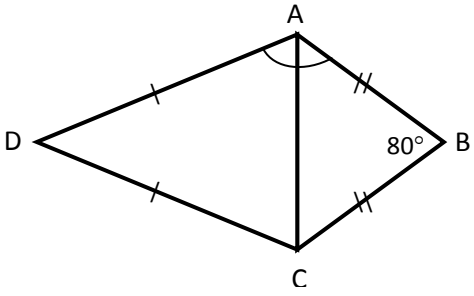
(7) In the opposite figure:

AB = BC , AD = CD ,

m ($\angle$ BAD) = 114°

m ($\angle$ B) = 80°

Find m ($\angle$ ADC)



(8) ABC is an isosceles triangle in which AB = AC, BC = 6 cm

$\overrightarrow{AD} \perp \overline{BC}$ cutting it at D and m (∠ BAD) = 25°, find the length of $\overline{BD}$ and m (∠ B)

(9) In the opposite figure:

If AB = AC , $\overline{AD} \perp \overline{BC}$

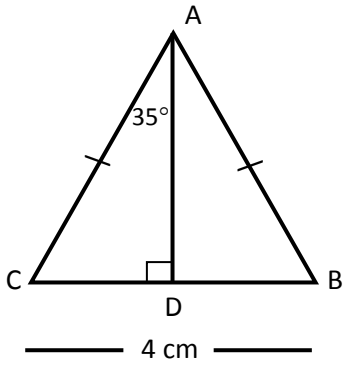
BC = 4 cm , and m (∠ DAC) = 35°

Find by proof: 1) m (∠ BAD)

2) m (∠ B)

3) The length of BD

4) Area of Δ ABC



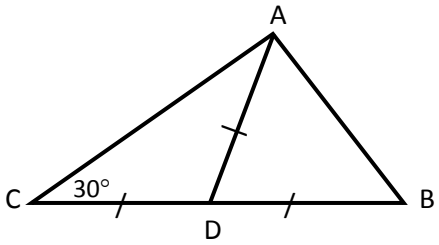
(10) In the opposite figure:

D ∈ $\overline{BC}$ such that DA = DB = DC

and m (∠ C) = 30°

Prove that: 1) Δ ABC is a right angled Δ

2) Δ ABD is an equilateral Δ



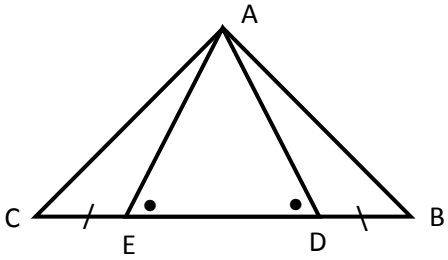
(11) In the opposite figure:

∠ ADE ≡ ∠ AED

B, D, E and C are collinear

and BD = CE

Prove that: Δ ABC is an isosceles Δ



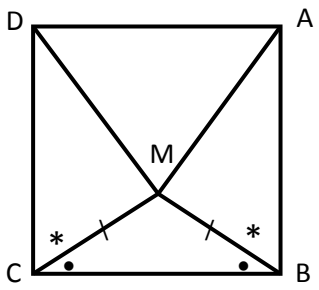
(12) In the opposite figure:

ABCD is a square

M is a point inside it such that

m (∠ MBC) = m (∠ MCB)

Prove that: Δ AMD is an isosceles Δ



(13) In the opposite figure:

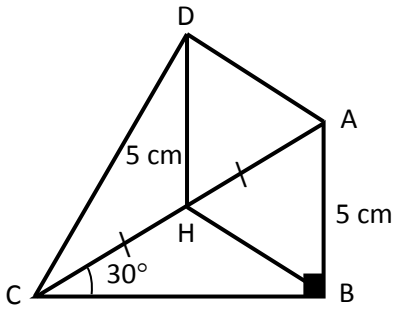
ABC is right angled triangle at B,

m (∠ ACB) = 30°, AB = 5 cm,

H is the midpoint of $\overline{AC}$

If DH = 5 CM

Prove that: m (∠ ADC) = 90°



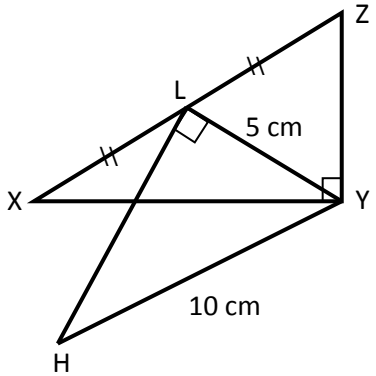
(14) In the opposite figure:

m (∠ YLH) = 90° , m (∠ H) = 30°

YH = 10 cm , m (∠ XYZ) = 90°,

L midpoint of $\overline{XZ}$

Find: The length of $\overline{XZ}$ with proof.



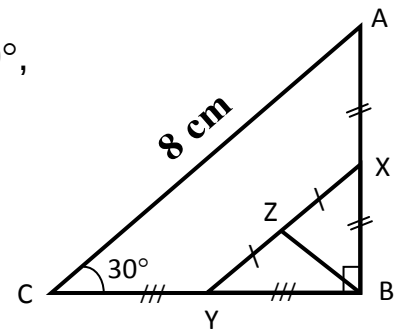
(15) In the opposite figure:

ABC is a triangle in which, m (∠ ABC) = 90°,

m (∠ C) = 30°,

X, Y, Z are the midpoints of $\overline{AB}$, $\overline{BC}$, $\overline{XY}$ respectively ,

Find with proof: the length of $\overline{AB}$, $\overline{XY}$, $\overline{BZ}$



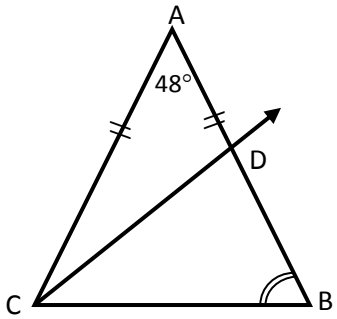
(16) In the opposite figure:

AB = AC , m (∠ BAC) = 48° ,

$\overrightarrow{CD}$ bisect ∠ BCA and cut $\overline{AB}$ at D find:

1) m (∠ B)

2) m (∠ BCD)



(17) In the opposite figure:

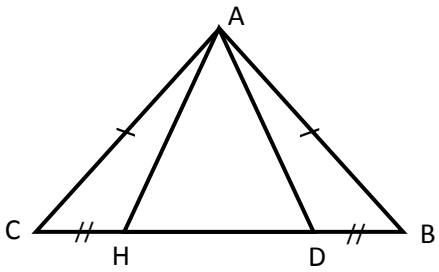
ABC is a triangle in which AB = AC,

$\overline{BD} \equiv \overline{CH}$

Prove that:

1) Δ ADH is isosceles triangle

2) ∠ AHD ≡ ∠ ADH

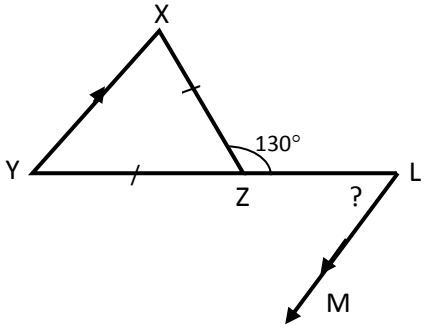


(18) In the opposite figure:

Z ∈ $\overline{LY}$, XZ = YZ ,

m (∠ LZX) = 130° , $\overrightarrow{LM}$ // $\overline{XY}$

Find: m (∠ MLY)



Part (2)

(1) Complete:

1) In Δ ABC if the point x is the midpoint of $\overline{BC}$, then $\overline{AX}$ is called ……

2) The medians of the triangle intersect at ……

3) The point of intersection of the medians of the triangle divides each of them in the ratio of …… : …… from the base.

4) The points which divides the medians of the triangle with ratio 1 : 2 from the base is the point of ……

5) The length of the median of the right angled triangle which is drawn from the vertex of the right angle equals ……

6) If the length of the median of the triangle which is drawn from one of its vertices equal half the length of the opposite side to this vertex, then ……

7) The length of the side opposite to angle of measure 30° in the right angled triangle equal ……

8) The base angle of the isosceles triangle are ……

9) The measure of any angle of the equilateral triangle equals ……

10) If two angles of a triangle are congruent the two sides opposite to these two angles are ……

11) If the angles of any triangle are equal in measure then ……

12) If the measure of an angle in the isosceles triangle is 60° then the triangle is ……

13) The axis of symmetry of a line segment is ……

14) The Axis of symmetry of the isosceles triangle is ……

15) The perpendicular projected from vertex of the isosceles triangle to the base bisects ……

16) The ray drawn from the vertex of the isosceles triangle passing through the midpoint of its base is ……

17) The bisector of the vertex angle of the isosceles triangle is ……

18) In Δ ABC is an equilateral triangle then m ($\angle$ B) = ……

19) If XYZ is a right angled triangle at Y and XY = YZ , then m ($\angle$ X) = ……°

20) ABC is an isosceles triangle where AB = AC and m ($\angle$ A) = 110°, then m ($\angle$ B) = ……

21) ABC is an isosceles triangle and the measure of one of the two base angles equals 65° then the measure of the vertex angle in this triangle equals ……

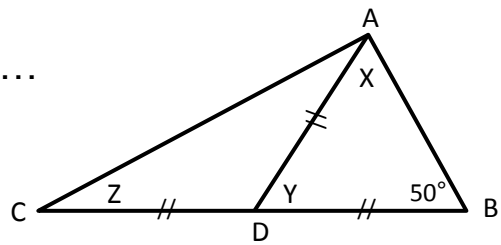
22) XYZ is an isosceles triangle where XY = XZ if m ($\angle$ X) = 80°, then m ($\angle$ Y) = ……

23) In Δ ABC if AB $\overline{AB} \perp \overline{BC}$ and AB = BC then m ($\angle$ A) = ……

24) In the opposite figure:

a) X = …… b) Y = ……

c) Z = ……



25) If two sides in the triangle are not equal then the greatest of them is opposite to an angle of …… measure.

26) If the measures of two angles are different then the greatest in measure is opposite to a side of ……

27) The longest side in the right angled triangle is ……

28) The distance between a point and a given straight line is the length of ……

29) In the obtuse angled triangle, then longest side is ……

30) In the isosceles triangle if AB = AC , m (∠ A) = 70°, then AB < …….

31) The longest side in the triangle ABC in which m (A) = 105° is ……

32) The shortest side in Δ ABC in which m (∠ A) = 40° and m (∠ B) = 60° is ……

33) The longest side in the triangle XYZ in which m (∠ X) = m (∠ Y) + m (∠ Z) is ……

34) In Δ XYZ if m (∠ X) > m (∠ Z), then XY < ……

35) In Δ ABC if AB > BC then m (∠ A) < ……

36) In Δ ABC if m (∠ A) = 67° and m (∠ B) = 33°, then AB > …… > ……

37) In any triangle the sum of lengths of any two sides is greater than ……

38) In Δ ABC it will be AB + BC > ……

39) In Δ DEF it will be EF < …… + ……

40) In Δ ABC if AB < BC < AC then the smallest angle in measure is ……

41) ABC is an isosceles triangle where AB = 3 cm and BC = 7 cm, then AC = ……

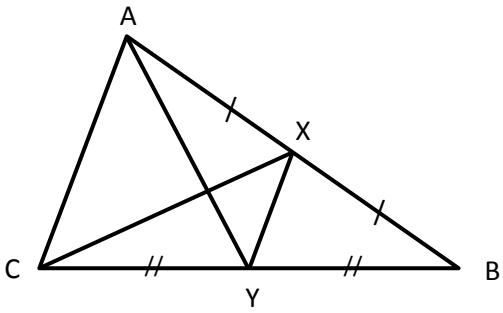
42) An isosceles triangle in which the lengths of two of its sides are 4 cm and 8 cm then the length of the third side equals ……

(2) In the opposite figure:

ABC is a triangle, X is midpoint of $\overline{AB}$,
Y is midpoint of $\overline{BC}$, XY = 5 cm
and $\overline{XC} \cap \overline{AY}$ = {M}
Where: CM = 8 cm, YM = 3 cm, find:

a) the perimeter of Δ MXY

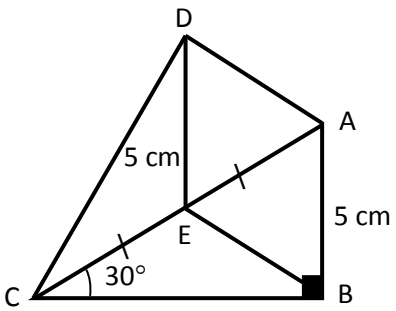
2) The perimeter of Δ MAC



(3) ABC is a triangle where point D is the midpoint of $\overline{BC}$ and point M $\in$ $\overline{AD}$, AM = 2 MD draw $\overrightarrow{CM}$ to intersect $\overline{AB}$ at point E if EC = 12 cm, then find the length of $\overline{EM}$

(4) In the opposite figure:

ABC is a right angled triangle at B,
m ($\angle$ ACB) = 30°, AB = 5 cm and
E is midpoint of $\overline{AC}$ if DE = 5 cm
Prove that: m ($\angle$ ADC) = 90°

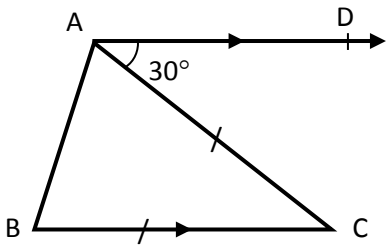


(5) In the opposite figure:

ABC is a triangle in which

AC = BC, $\overrightarrow{AD}$ // $\overline{BC}$ and m (∠ DAC) = 30°

Find the measures of the angles of Δ ABC



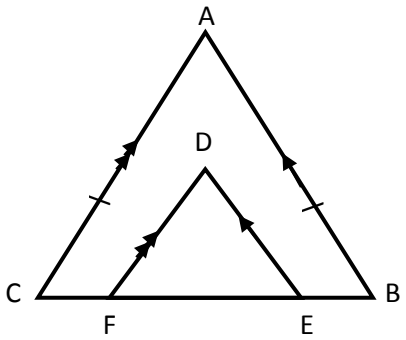
(6)

AB = AC , $\overline{DE}$ // $\overline{AB}$ and $\overline{DF}$ // $\overline{AC}$

Prove that:

1) DE = DF

2) m (∠ BAC) = m (∠ EDF)



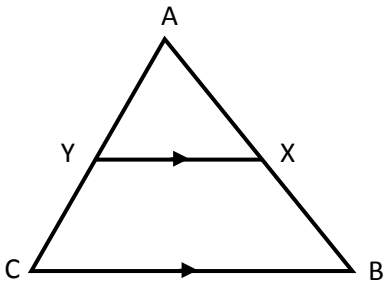
(7) In the opposite figure:

ABC is a triangle,

AB > AC and $\overline{XY}$ // $\overline{BC}$

prove that:

m (∠ AYX) > m (∠ AXY)



(8) In the opposite figure:

ABC is an equilateral triangle

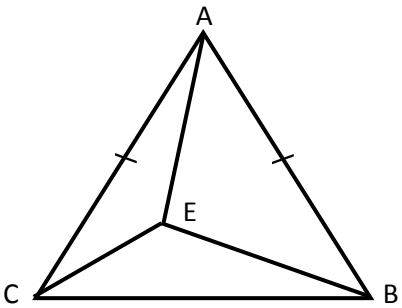
E is a point inside it,

m (∠ ECB) > m (∠ EBC)

Prove that:

1) m (∠ ABE) > m (∠ ACE)

2) m (∠ A) > m (∠ ABE) > m (∠ ACE)



(9)

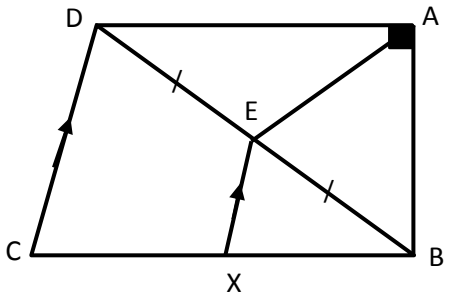
ABCD is a quadrilateral in which m (∠ A) = 90°

$\overline{AE}$ is a median of Δ ABD

$\overleftrightarrow{EX}$ // $\overline{DC}$ and $\overline{EX} \cap \overline{BC}$ = { X }

If AE > EX

Prove that: m (∠ C) > m (∠ DBC)

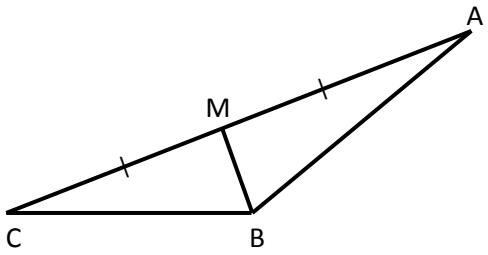


(10) In the opposite figure:

$\overline{BM}$ is a median in the triangle ABC

and BM < AM

Prove that: ∠ ABC is an obtuse angle



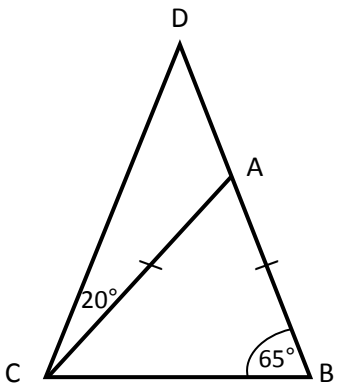
(11) In the opposite figure:

ABC is a triangle, $\overrightarrow{CD}$ bisect ∠ C and

intersects $\overline{AB}$ at point D, m (∠ BDC) = 100°

and DB = DC

Prove that: AC > DB

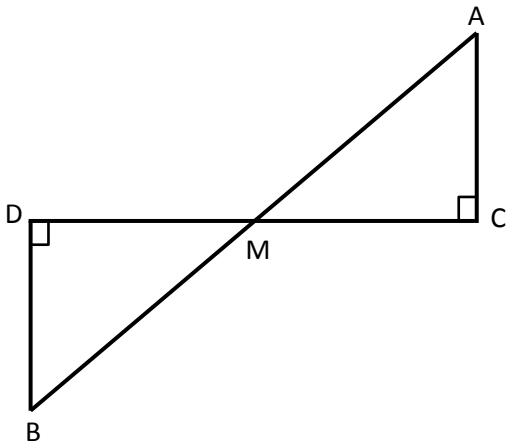


(12) In the opposite figure:

$\overline{AB} \cap \overline{CD}$ = { M } ,

$\overline{AC} \perp \overline{CD}$ and $\overline{BD} \perp \overline{CD}$

Prove that AB > CD



(13) In the opposite figure:

Δ ABC in which AB > AC,

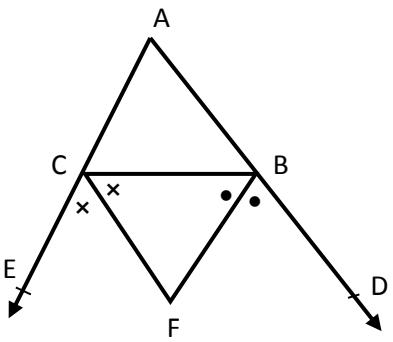
D $\in \overrightarrow{AB}$, E $\in \overrightarrow{AC}$, $\overline{BF}$ bisects $\angle$ DBC,

$\overline{CF}$ bisects $\angle$ BCE, $\overrightarrow{BF} \cap \overrightarrow{CF}$ = {F}

Prove that:

1) m ($\angle$ FBC) > m ($\angle$ BCF)

2) CF > BF



Part (1) Answers

(1) Complete:

1) 120°
2) half the hypotenuse
3) the hypotenuse
4) base
5) 1
6) half the length of the hypotenuse
7) 70°
8) 4 cm
9) is equidistant from its end points
10) < x & $\overline{YZ}$
11) $\overline{BC}$
12) 8 cm
13) 3
14) 80°
15) $\frac{2}{3}$
16) equal
17) bisects the base & perpendicular to it
18) axis of symmetry
19) zero
20) 1 : 2
21) its end points
22) 30°
23) 40°
24) 2
25) 180°
26) AC
27) one
28) concurrent
29) vertex, the base
30) 45°
31) x = 120° y = 60° z = 60°

(2) Proof

Given: $\angle B = 90°$, AC = 12 cm , m ($\angle C$) = 30°, EC = EB , AD = DC

R.T.P: 1) The perimeter of Δ ABD

2) The length of $\overline{DF}$

Proof: in Δ ABC

$\because \angle B = 90°$, $\overline{BD}$ median

$\therefore BD = \frac{1}{2} AC = \frac{1}{2} \times 12 = 6$ cm

$\because$ m ($\angle C$) = 30°

$\therefore AB = \frac{1}{2} AC = \frac{1}{2} \times 12 = 6$ cm

$BC = \sqrt{AC^2 - AC^2} = \sqrt{12^2 - 6^2}$

$BE = \frac{1}{2} BC$

P. of Δ ABD = 6 + 6 + = cm

$\because BD \cap AE = \{ F \}$

$\therefore$ F is the point of concurrence

$\therefore DF = \frac{1}{3} DB = \frac{1}{3} \times 6 = 2$ cm

(3) Proof:

$\because \overline{AD} \,//\, \overline{BC}$, AB transversal

$\therefore$ m ($\angle C$) = 30° " Alternate"

in Δ ABC

$\because AC = BC$

$\therefore$ m ($\angle ABC$) = $\frac{180-30}{2}$ = 75°

(4) In Δ ABC

∵ E, D midpoints of $\overline{AC}$, $\overline{AB}$

∴ BC = 2 DE = 4 × 2 = 8 cm

∵ $\overline{BE} \cap \overline{DC}$ = { M }

∴ M is the concurrent point

∴ MC = 6 cm ,

BM = $\frac{2}{3}$ BE = $\frac{2}{3} \times 6$ = 4 cm

P. of Δ BMC = 8 + 6 + 4 = 18 cm

(5) ∵ ABC is right angled triangle

, $\overline{BD}$ median

∴ BD = $\frac{1}{2}$ AC = 5 cm ,

∵ m (∠ C) = 30°

∴ AB = $\frac{1}{2}$ AC = 5 cm

AD = $\frac{1}{2}$ AC = 5 cm

P. of Δ ABD = 5 + 5 + 5 = 15 cm

(6) in Δ ABC

∵ m (∠ ACB) = 180 – (30 + 50) = 100°

∴ m (∠ ACD) = 180 – 100 = 80°

∵ AC = AD

∴ m (∠ D) = m (∠ ACD) = 80°

In Δ ADC

m (∠ CAD) = 180 – (80 + 80) = 20°

(7) In Δ ABC

$\because$ AB = AC

$\therefore$ m ($\angle$ BAC) = $\frac{180-80}{2}$ = 50°

$\because$ m ($\angle$ BAD) = 114°

$\therefore$ m ($\angle$ DAC) = 114 – 50 = 64°

In Δ ADC

$\because$ AD = DC

$\therefore$ m ($\angle$ DAC) = m ($\angle$ DCA) = 64°

$\therefore$ m ($\angle$ D) = 180 – (64 + 64) = 52°

(8) In Δ ABC

$\because$ AB = AC , $\overline{AD} \perp \overline{BC}$

$\therefore$ BD = DC = $\frac{1}{2}$ × 6 = 3 cm ,

m ($\angle$ BAD) = m ($\angle$ DAC) = 25°

$\therefore$ m ($\angle$ B) = $\frac{180-50}{2}$ = 65°

(9) In Δ ABC

$\because$ AC = AB, $\overline{AD} \perp \overline{BC}$

$\therefore$ ($\angle$ BAD) = m ($\angle$ DAC) = 35°

$\therefore$ BD = DC = 2 cm

m ($\angle$ B) = $\frac{180-70}{2}$ = 55°

Area of Δ ABC = $\frac{1}{2}$ × BC × AD

(10) In Δ ABC

∵ DC = DB

∴ AD is a median

∵ AD = DC = DB = $\frac{1}{2}$ BC → (1)

∴ m (∠ A) = 90°

∵ m (∠ C) = 30°

∴ AB = $\frac{1}{2}$ BC → (2)

From (1) , (2)

∴ Δ ABD is an equilateral triangle

(11) In Δ ADE

∵ m (∠ ADE) = m (∠ AED)

∴ AD = AE , m (∠ AEC) = m (∠ ADB)

In ΔΔ AEC , ADB

∵ AD = AE

DB = EC

m (∠ AEC) = m (∠ ADB)

∴ Δ AEC ≡ Δ ADB ,

∴ AC = AB

∴ Δ ABC is an isosceles Δ

(12) In square ABCD

$\because$ m ($\angle$ MBC) = m ($\angle$ MCB)

$\therefore$ m ($\angle$ ABM) = m ($\angle$ MCD)

In $\Delta\Delta$ ABM , DCM

$\because$ MB = MC
DC = AB
m ($\angle$ ABM) = m ($\angle$ MCD)

$\therefore \Delta$ ABM $\equiv \Delta$ DCM

$\therefore$ AM = DM #

(13) In Δ ABC

$\because$ m ($\angle$ B) = 90° , m ($\angle$ ACB) = 30°

$\therefore$ AC = 2 AB = 10 cm

In Δ ACD

$\because$ DH is a median

DH = $\frac{1}{2}$ AC = 5 cm

$\therefore$ m ($\angle$ ADC) = 90°

(14) In Δ XYZ

$\because$ LZ = LX

$\therefore$ YL is a median

$\because$ m ($\angle$ Y) = 90°

$\therefore$ YL = $\frac{1}{2}$ × Z

$\therefore$ XZ = 10 cm #

(15) In Δ ABC

$\because$ m ($\angle$ B) = 90° , m ($\angle$ C) = 30°

$\therefore$ AB = $\frac{1}{2}$ AC = $\frac{1}{2}$ × 8 = 4 cm

$\because$ X , Y are the midpoint of $\overline{AB}$, $\overline{BC}$

$\therefore$ XY = $\frac{1}{2}$ AC = 4 cm

In Δ XBY

$\because$ XZ = ZY

$\therefore$ ZB is a median

$\therefore$ ZB = $\frac{1}{2}$ XY = $\frac{1}{2}$ × 4 = 2 cm #

(16) In Δ ABC

$\because$ AB = AC

$\therefore$ m ($\angle$ B) = m ($\angle$ C) = $\frac{180-48}{2}$ = 66°

$\because$ $\overrightarrow{CD}$ bisect $\angle$ B , $\angle$ A

$\therefore$ m ($\angle$ BCD) = 66 ÷ 2 = 33°

(17) In Δ ABC

$\because$ AB = AC

$\therefore$ m ($\angle$ B) = m ($\angle$ C)

In $\Delta\Delta$ AHC, ADB

$\because$
- AC = AB
- CH = DB
- m ($\angle$ C) = m ($\angle$ B)

$\therefore \Delta AHC \equiv \Delta ADB,$

$AH = AD$

In ΔADH

$\because AH = AD$

$\therefore m(\angle AHD) = m(\angle ADH)$

(18) In ΔXYZ

$m(XZY) = 180 - 130 = 50°$

$\because XZ = ZY$

$\therefore m(\angle Y) = \frac{180-50}{2} = 65°$

$\because \overrightarrow{LM} // \overline{XY}$

$\therefore m(\angle Y) = m(\angle L) = 65°$ "Alternate"

Part (2) Answers

(1) Complete

1) median 2) one point 3) 1 : 2

4) concruence 5) $\frac{1}{2}$ the hypotenuse

6) the triangle is right angled triangle

7) $\frac{1}{2}$ the hypotenuse 8) congruent 9) 60°

10) congruent and the triangle is an isosceles triangle

11) The triangle is an equilateral triangle

12) an equilateral triangle

13) the straight line which is perpendicular to a line segment at its middle.

14) The straight line drawn from the vertex angle perpendicular to its base.

15) The base and the base angle.

16) perpendicular to its base and bisect the vertex angle.

17) perpendicular to its base and bisect the base

18) 60° 19) 45° 20) 35°

21) 50° 22) 50° 23) 45°

24) a) 50° b) 80° c) 40°

25) greatest 26) greatest length 27) the hypotenuse

28) the perpendicular line segment drawn from the point to the given straight line.

29) the opposite to the obtuse angle

30) BC 31) $\overline{BC}$ 32) $\overline{BC}$

33) $\overline{YZ}$ 34) ZY 35) C

36) BC , AC 37) the length of the third side

38) AC 39) DF , DE 40) C

41) 7 cm 42) 8 cm

(2)

∵ M is the intersection point of the medians of Δ ABC

∴ XM = $\frac{1}{2}$ MC = 4 cm

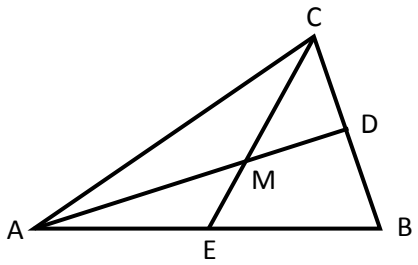
∴ the perimeter of Δ XMY = 4 + 5 + 3 = 12 cm, AM = 2MY = 6 cm

∵ X is the midpoint of $\overline{AB}$, Y is midpoint of $\overline{BC}$

∴ AC = 2 × y = 10 cm

∴ the perimeter of Δ MAC = 6 + 8 + 10 = 24 cm

(3)



∵ D is the midpoint of $\overline{BC}$

∴ $\overline{AD}$ is a median in Δ ABC

∵ AM = 2 MD

∴ M is the intersection point of the medians of Δ ABC

∵ M ∈ $\overline{CE}$

∴ $\overline{CE}$ is a median in Δ ABC

∴ EM = $\frac{1}{3}$ BC = $\frac{1}{3}$ × 12 = 4 cm

(4) In Δ ABC

∵ m (∠ B) = 90°, m (∠ ACB) = 30°

∴ AB = $\frac{1}{2}$ AC

, ∵ AB = DE = 5 cm

∴ DE = $\frac{1}{2}$ AC

∵ DE is a median in Δ ACD

, DE = $\frac{1}{2}$ AC (half the hypotenuse)

∴ m (∠ BCD) = 90°

(5) ∵ $\overrightarrow{AD}$ // $\overline{BC}$, $\overline{AC}$ transversal

∴ m (∠ C) = m (∠ DAC) = 30° (Alternate angles)

in Δ ABC :

∵ AC = BC

∴ m (∠ CAB) = m (∠ B) = $\frac{180°-30°}{2} = 75°$

(6) ∵ AB = AC

∴ m (∠ B) = m (∠ C) (1)

∵ $\overline{AB}$ // $\overline{DE}$, $\overline{BE}$ transversal

∴ m (∠ B) = m (∠ DEF) (corresponding angles) (2)

, $\overline{DF}$ // $\overline{AC}$, $\overline{CF}$ transversal

∴ m (∠ C) = m (∠ DFE) (corresponding angles) (3)

From (1) , (2)

∴ m (∠ DEF) = m (∠ CFE)

∴ DE = DF

in ΔΔ ABC , DEF

∵ m (∠ B) = m (∠ DEF)

, m (∠ C) = m (∠ DFE)

∴ m (∠ BAC) = m (∠ EDF)

(7) in Δ ABC

∵ AB > AC

∴ m (∠ C) > m (∠ B) (1)

∵ $\overline{XY}$ // $\overline{BC}$ and $\overline{AC}$ transversal

∴ m (∠ AYX) = m (∠ C) (corresponding angles) (2)

∵ $\overline{XY}$ // $\overline{BC}$, $\overline{AB}$ transversal

∴ m (∠ AXY) = m (∠ B) (corresponding angles) (3)

From (1) , (2) , (3)

∴ m (∠ AYX) > m (∠ AXY)

(8) ∵ Δ ABC is an equilateral triangle

∴ m (∠ ABC) = m (∠ ACB) = 60°

∵ m (∠ EBC) < m (∠ ECB)

∴ m (∠ ABC) – m (∠ EBC) > m (∠ ACB) – m (∠ ECB)

∴ m (∠ ABE) > m (∠ ACE) (1)

∵ m (∠ A) = m (∠ B)

∴ m (∠ A) = m (∠ ABE) + m (∠ EBC)

∴ m (∠ A) > m (∠ ABE) (2)

From (1) , (2)

∴ m (∠ A) > m (∠ ABE) > m (∠ ACE)

(9) $\overline{AE}$ is a median in Δ ABD , m ($\angle$ A) = 90°

$\therefore$ AE = $\frac{1}{2}$ BD

$\because$ E is the midpoint of $\overline{BD}$, $\overline{EX}$ // $\overline{AC}$

$\therefore$ EX = $\frac{1}{2}$ DC

$\therefore$ AE > EX

$\therefore$ $\frac{1}{2}$ BD > $\frac{1}{2}$ DC

$\therefore$ BD > DC

$\therefore$ m ($\angle$ C) > m ($\angle$ DBC)

(10) In Δ ABM: $\because$ AM > BM

$\therefore$ m ($\angle$ ABM) > m ($\angle$ A) (1)

$\because$ AM = CM

$\therefore$ MC > MB

$\therefore$ m ($\angle$ MBC) > m ($\angle$ C) (2)

$\therefore$ m ($\angle$ ABM) + m ($\angle$ MBC) > m ($\angle$ A) + m ($\angle$ C)

$\therefore$ m ($\angle$ ABC) > m ($\angle$ A) + m ($\angle$ C)

$\therefore$ $\angle$ ABC is an obtuse triangle

(11) in Δ DBC

$\because$ DB = DC

$\therefore$ m ($\angle$ B) = m ($\angle$ DCB) = $\frac{180°-100°}{2}$ = 40°

$\because$ $\overrightarrow{CD}$ bisect $\angle$ ACB

$\therefore$ m ($\angle$ ACD) = 40°

, $\because$ D $\in$ $\overline{AB}$

$\therefore m(\angle ADC) = 180° - 100° = 80°$

$\therefore$ in ΔADC

$m(\angle A) = 180° - (40° + 80°) = 60°$

$\therefore m(\angle ADC) > m(\angle A)$

$\therefore AC > DC$ but $DC = DB$

$\therefore AC > DB$

(12) in ΔACM

$\because m(\angle C) = 90°$

$\therefore AM = CM$ (1)

in ΔBDM

$\because m(\angle D) = 90°$

$\therefore BM > DH$ (2)

$\therefore AM + MB > CM + MD$

$\therefore AB > CD$

(13) In ΔABC

$\because AB > AC$

$\therefore AB > AC$

$\therefore m(\angle ABC) < m(\angle ACB)$

$\because B \in \overline{AD}$, $C \in \overline{AE}$

$\therefore 180° - m(\angle ABC) > 180° - m(\angle ACB)$

$\therefore m(\angle CBD) > m(\angle BCE)$

$\because \overrightarrow{BF}$ bisects $\angle DBC$, $\overrightarrow{CF}$ bisect $\angle BCE$

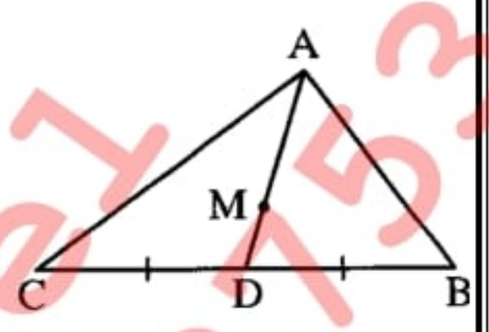
$\therefore m(\angle FBC) > m(\angle BCF)$

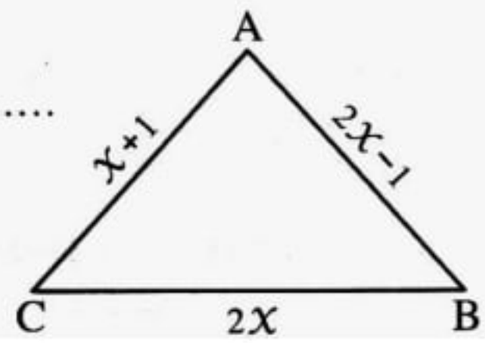
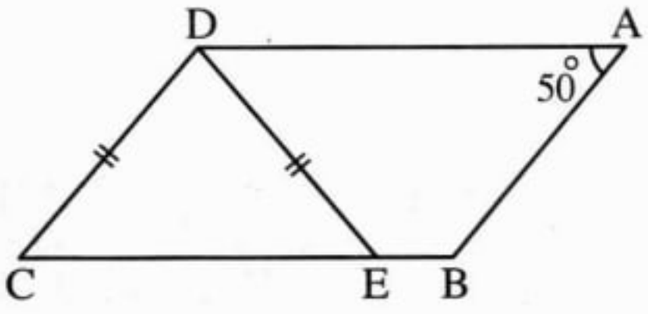
$\therefore CF > BF$

Exercises

[A] : Choose The Correct Answer : -

1	The medians of the triangle intersect at ..... point. (a) 1 (b) 2 (c) 3 (d) 4	A
2	The number of medians in the right-angled triangle = ... (a) 3 (b) 2 (c) 1 (d) 0	A
3	The point of intersection of the medians in the triangle divides each of them by the ratio ..... from the vertex. (a) 1 : 3 (b) 3 : 1 (c) 2 : 1 (d) 1 : 2	C
4	The point of concurrence of the medians of the triangle divides each median in the ratio of ..... from the base. (a) 1 : 2 (b) 1 : 3 (c) 2 : 1 (d) 3 : 1	A
5	If $\overline{AD}$ is a median of triangle ABC , and M is the point of intersection of the medians , then AM = ... AD (a) $\frac{1}{3}$ (b) $\frac{2}{3}$ (c) $\frac{1}{2}$ (d) $\frac{1}{4}$	B
6	$\overline{AD}$ is a median in Δ ABC , M is the point of intersection of its medians , then AM = ... MD (a) 2 (b) $\frac{1}{2}$ (c) 3 (d) $\frac{1}{3}$	A
7	If $\overline{XE}$ is a median in Δ XYZ , M is the point of intersection of its medians , then EM = ... XE (a) $\frac{1}{2}$ (b) 2 (c) $\frac{1}{3}$ (d) $\frac{2}{3}$	C
8	In Δ ABC : If AD = 6 cm. is a median and M is a point of concurrent , then MA = ... cm. (a) 6 cm. (b) 3 cm. (c) 2 cm. (d) 4 cm.	D
9	The length of the hypotenous of the right-angled triangle = ... the length of the median which drawn from the vertex of the right-angle. (a) half (b) twice (c) third (d) quarter	B

10	If $\overline{AD}$ is a median of Δ ABC , M is the point of intersection of its medians and AM = 6 cm. , then AD = …… (a) 12 cm. (b) 6 cm. (c) 18 cm. (d) 9 cm.	D
11	**oose the correct answer :** **In the opposite figure :** $\overline{AD}$ is a median in Δ ABC , M is the point of intersection of the medians , MD = 2 cm. , then AD = …… cm. (a) 2 (b) 4 (c) 6 (d) 8 	C
12	In the right-angled triangle , the length of the median from the vertex of the right angle equals …… the length of hypotenuse. (a) half (b) twice (c) third (d) forth	A
13	In Δ ABC which is right at B , if AC = 20 cm. , then the length of the median of the triangle drawn from B equals …… (a) 10 cm. (b) 8 cm. (c) 6 cm. (d) 5 cm.	A
14	The length of the side opposite to the angle of measure 30° in the right-angled …… the length of the hypotenuse. (a) twice (b) half (c) square (d) equals	B
15	Triangle ABC : If m ($\angle$ A) = 30° , m ($\angle$ B) = 90° , then BC = …… (a) $\frac{1}{2}$ AB (b) $\frac{1}{2}$ AC (c) 2 AB (d) 2 AC	B
16	In Δ ABC if : m ($\angle$ B) = 90° and m ($\angle$ A) = 60° , then AC = …… AB (a) 2 (b) = (c) $\frac{1}{2}$ (d) $\frac{1}{3}$	A
17	In Δ ABC : m ($\angle$ A) = 30° , m ($\angle$ B) = 90° , AC = 10 cm. , then BC = …… cm. (a) 20 (b) 15 (c) 10 (d) 5	D
18	In the rectangle ACBD , if AC = 10 cm. , then BD = …… (a) 5 (b) 10 (c) 15 (d) 20	B
19	In any isosceles triangle , the type of the base angles is …… (a) acute. (b) right. (c) obtuse. (d) reflex.	A
20	The base angles of the isosceles triangle are …… (a) congruent. (b) alternate. (c) corresponding. (d) supplementary.	A

21	If measure of one of the two base angles of the isosceles triangle equals 40° then the measure of the vertex angle = ...° (a) 40 (b) 100 (c) 80 (d) 50	B
22	In Δ ABC : AB = AC , m (∠ B) = 50° , then m (∠ A) = ...° (a) 65 (b) 80 (c) 50 (d) 100	B
23	In the isosceles triangle , if the measure of one of the two base angle is 70° , then the measure of its vertex angle is ..... (a) 70° (b) 110° (c) 20° (d) 40°	D
24	In a triangle ABC : If AB = AC and m (∠ A) = 40° , then m (∠ C) = ... (a) 40° (b) 70° (c) 140° (d) 50°	B
25	If the measure of an angle of the isosceles triangle is 100° , then the measure of one of the other angles = ... (a) 50° (b) 80° (c) 40° (d) 100°	C
26	The triangle whose sides lengths are 2 cm. , (χ + 1) cm and 5 cm. becomes an isosceles triangle when χ = ... cm. (a) 1 (b) 2 (c) 3 (d) 4	D
27	The triangle whose sides lengths are 3 cm. , (χ + 5) and 9 becomes an isosceles if χ = ... cm. (a) 3 (b) 4 (c) 5 (d) 6	B
28	**In the opposite figure :** ABC is a triangle in which : m (∠ B) = m (∠ C) , then χ = ... (a) 1 (b) 2 (c) 3 (d) 4 	B
29	ABCD is a parallelogram : DE = DC , m (∠ A) = 50° , then m (∠ EDC) = ... (a) 50° (b) 60° (c) 70° (d) 80° 	D
30	In Δ ABC : if AB = AC and m (∠ A) = 60° , if its perimeter is 18 cm. , then BC = ... cm. (a) 18 (b) 6 (c) 3 (d) 60	B

31	Δ ABC , AB = AC , D is the midpoint of $\overline{BC}$, then $\overline{AD}$ is …… (a) median. (b) altitude. (c) bisector of the vertex angle. (d) all the previous.	D
32	The measure of exterior angle of an equilateral triangle = …… (a) 30° (b) 60° (c) 120° (d) 180°	C
33	In Δ XYZ : if XY = XZ , then the exterior angle at the vertex Z is …… (a) acute. (b) obtuse. (c) right. (d) reflex.	B
34	The axis of symmetry of a line segment is the straight line which is …… (a) Perpendicular to it. (b) its bisector. (c) parallel to it. (d) the perpendicular bisector.	D
35	If A $\in$ the axis of symmetry of $\overline{BC}$, then $\overline{AB}$ …… $\overline{AC}$ (a) $\perp$ (b) $\equiv$ (c) // (d) =	B
36	The number of axis of symmetry in the scalene triangle is …… (a) 1 (b) zero (c) 3 (d) 4	B
37	The number of axes of symmetry in the isosceles triangle is …… (a) 1 (b) 2 (c) 3 (d) zero	A
38	The equilateral triangle has …… axes of symmetry. (a) one (b) two (c) three (d) otherwise	C
39	The triangle which has no axes of symmetry is …… triangles. (a) scalene (b) isosceles (c) equilateral (d) otherwise	A
40	If Δ ABC has one axes of symmetry and m ($\angle$ ABC) = 140° , then m ($\angle$ A) = …… (a) 30° (b) 20° (c) 40° (d) 60°	B
41	Δ ABC in which m ($\angle$ A) = m ($\angle$ B) = 65° , then it has …… axis (axes) of symmetry. (a) 1 (b) 2 (c) 3 (d) zero	A
42	The quadrilateral ABCD in which $\overleftrightarrow{BD}$ is an axis of symmetry of $\overline{AC}$ may by …… (a) a rhombus (b) a rectangle (c) a parallelogram (d) a trapezium	A

43	In Δ ABC , AB > AC , then m ($\angle$ C) ..... m ($\angle$ B) (a) < (b) > (c) = (d) ≤	B
44	In Δ ABC , AB > AC , m ($\angle$ C) = 70° , then m ($\angle$ B) may be ..... (a) 70° (b) 50° (c) 80° (d) 75°	B
45	In Δ ABC : AB = AC , m ($\angle$ B) = 65° , then : AC ..... BC (a) < (b) > (c) = (d) ≤	B
46	In Δ ABC : If AB = 9 cm. , BC = 6 cm. , AC = 7 cm. , then the smallest angle is ..... (a) $\angle$ BAC (b) $\angle$ ABC (c) $\angle$ ACB (d) $\angle$ BCA	A
47	Δ XYZ , m ($\angle$ X) = 60° , m ($\angle$ Y) = 40° , then XZ ..... XY (a) < (b) > (c) = (d) nothing.	A
48	Δ ABC , m ($\angle$ B) = 90° , then AB ..... AC (a) > (b) = (c) < (d) ≥	C
49	In Δ XYZ : If m ($\angle$ X) = 30° and m ($\angle$ Y) = 80° , then ..... (a) XY < XZ (b) XY > XZ (c) XY = XZ (d) XY < YZ	A
50	The triangle in which the measure of two angles are 74° and 53° is ..... triangle. (a) a right-angled (b) an isosceles (c) an equilateral (d) a scalene	B
51	In Δ ABC if : m ($\angle$ B) = 60° and m ($\angle$ C) = 50° , then the shortest side in triangle ABC is ..... (a) $\overline{AC}$ (b) $\overleftrightarrow{BC}$ (c) $\overline{BC}$ (d) $\overline{AB}$	D
52	In the triangle ABC , if m ($\angle$ B) = 90° , then the greatest side in length is ..... (a) $\overline{AB}$ (b) $\overline{BC}$ (c) $\overline{AC}$ (d) $\overline{XY}$	C
53	The triangle ABC is obtuse-angled triangle at B , then the longest side is ..... (a) AB (b) BC (c) AC (d) AD	C
54	Δ XYZ is right-angled at Y , then XZ ..... YZ (a) = (b) > (c) ≤ (d) <	B

55	In Δ ABC : m (∠ B) + m (∠ C) = 3 m (∠ A) , then m (∠ A) = ...° (a) 30 (b) 60 (c) 45 (d) 90	C
56	The sum of lengths of any two sides in any triangle ..... the length of the third side. (a) is less than (b) is greater than (c) equals (d) otherwise	B
57	If the lengths of two sides in an isosceles triangle are 2 cm. and 5 cm. , then the length of the third side is ..... cm. (a) 2 (b) 3 (c) 5 (d) 7	C
58	Δ ABC , AB = 2 cm. , BC = 7 cm. , then AC may equal ..... (a) 2 cm. (b) 5 cm. (c) 9 cm. (d) 8 cm.	D
59	The lengths of two sides in a triangle are 4 cm. and 9 cm. and it has on axis of symmetry , then the length of third side is ..... (a) 4 cm. (b) 5 cm. (c) 9 cm. (d) 13 cm.	C
60	In Δ ABC if : AB = 3 cm. and BC = 5 cm. , then AC ∈ ..... (a)]3 , 8] (b) [2 , 8] (c)]2 , 8 [(d)]2 , 5 [	C
61	Which of the following can be sides to draw the triangle ..... (a) 5 cm. , 6 cm. , 12 cm. (b) 5 cm. , 6 cm. , 11 cm. (c) 5 cm. , 6 cm. , 4 cm. (d) 4 cm. , 6 cm. , 10 cm.	C
62	How many different triangles can be formed with sides of lengths a whole number of cm. and each with perimeter 7 cm. ? (a) 1 (b) 2 (c) 3 (d) 4	B
63	If the length of one side of a triangle is 5 cm. , then which of the following could be the lengths of the other two sides ? (a) 2 cm. and 3 cm. (b) 7 cm. and 2 cm. (c) 2 cm. and 2 cm. (d) 4 cm. and 6 cm.	D
64	In the triangle ABC , AC ..... (AB – BC) (a) > (b) ≥ (c) ≤ (d) <	A